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FACT SHEET
KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM
PERMIT TO DISCHARGE TREATED WASTEWATER
INTO WATERS OF THE COMMONWEALTH

PERMIT No.: KY0107000 Permit Writer: Sara J. Beard Date: June 15, 2010
AI No.: 40285

1. **SYNOPSIS OF APPLICATION**

a. Name and Address of Applicant

Cash Creek Generation, LLC
C/O The Erora Group
4350 Brownsboro Road, Suite 110
Louisville, Kentucky 40207

b. Facility Location

Cash Creek Generation Station
KY 1078
Henderson, Henderson County, Kentucky

c. Description of Applicant's Operation

Coal gasification plant producing natural gas and electricity (SIC Code 4911).

d. Production Capacity of Facility

565 MW (net) of electric power generation

e. Description of Existing Pollution Abatement Facilities

Outfall 001 - Process wastewater discharge consisting of low volume wastes (from the water treatment demineralizer, service water, and surface drains equipped with oil/water separators), cooling tower blowdown (internal Outfall 002), and sanitary wastewater (internal Outfall 003).

Outfall 002 - No treatment of cooling tower blowdown prior to commingling with Outfall 001.

Outfall 003 - Sanitary wastewaters are treated by screening, activated sludge, sedimentation, and chlorine disinfection prior to commingling with Outfall 001.

e. Description of Existing Pollution Abatement Facilities (continued)

Outfall 004 - Effluent from the slag landfill leachate pond and stormwater from the north portion of the slag landfill.

Outfall 005 - Stormwater from the south portion of the slag landfill.

Outfall 006 - Plant intake.

Outfall 007 - This outfall is being removed from the permit. This outfall was for previously for the discharge of metal cleaning wastes. There shall be no discharge of metal cleaning wastes. When such wastes are generated the permittee will ship off site for treatment and disposal.

f. Permitting Action

This action constitutes a reopening of a major KPDES permit for a new source coal gasification facility that generates electricity and natural gas. Pursuant to 401 KAR 5:075, Section 2(3)(a) only those conditions being modified are reopened and subject to public comment. Below is a list of modifications included within this fact sheet and permit (changes are also highlighted):

- i. The description for Outfalls 004 and 007 are being revised to provide clarification.
- ii. The latitude and longitude for each outfall has been provided.
- iii. The flow information for the Green River has been updated.
- iv. The sampling type for Chronic Toxicity at Outfall 001 has been corrected. Also, the sampling frequency has been increased from once per quarter to once per month.
- v. Additional analysis of the estimated effluent characteristics has been provided for Outfall 002 and the leachate pond as well as an explanation of how the results were applied.
- vi. Calculated flows for Outfalls 004 and 005 as well as a description of how those values were obtained.
- vii. Outfall 007 (Metal Cleaning Wastes) has been removed from this permit. The permittee has agreed to not discharge this wastestream when generated and is therefore not permitted to do so.
- viii. The language in the Antidegradation section of the Fact Sheet has been revised to accurately reflect the review and approval.
- ix. The language for additional effluent data submission after plant start up has been revised to include the leachate pond and to specify that a minimum of five (5) samples are required.
- x. The calculation in Fact Sheet Attachment B concerning COD has been revised using the updated flows for the Green River.
- xi. The SSTWAM runs (reasonable potential analysis) for the estimated effluent characteristics for Outfall 004 and the leachate pond have been included in Fact Sheet Attachment C.

2. RECEIVING WATERS

a. Receiving Water Name

Outfall 001 discharges to the Green River at the following latitude/longitude: 37°43'16"N/87°23'45"W. Outfalls 002 and 003 are internal outfalls to 001.

Outfalls 004 and 005 discharge to an unnamed tributary of Cash Creek at the following latitude/longitudes: 37°42'56"N/87°25'38"W and 37°42'42"N/87°23'44"W, respectively.

Outfall 006 is the plant intake and is located in the Green River at the following latitude/longitude: 37°43'10"N/87°23'44"W.

b. Stream Segment Use Classifications

The Green River and the Unnamed Tributary of Cash Creek are classified as Warmwater Aquatic Habitat, Primary/Secondary Contact Recreation and Domestic Water Supply.

c. Stream Segment Antidegradation Categorization

Both the Green River and the unnamed tributary to Cash Creek are categorized as High Quality Waters.

d. Stream Low Flow Condition

At the point of discharge the 7Q10 and the Harmonic Mean for the Green River are 473 cfs and 3,765 cfs, respectively.

At the point of discharge the 7Q10 and the Harmonic Mean for the Unnamed Tributary of Cash Creek are 0.0 cfs and unavailable, respectively.

3. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 001 - Process wastewater discharge consisting of low volume wastes (from the water treatment demineralizer, service water, and surface drains equipped with oil/water separators), cooling tower blowdown (internal Outfall 002), and sanitary wastewater (internal Outfall 003).

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow (MGD)	1.89	1.89	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Hardness (as mg/l CaCO ₃)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Temperature (°F)	87.1	87.1	Report	89.0	401 KAR 10:031, Section 4(1)
*Total Suspended Solids (mg/l)	N/R	N/R	30	50	401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A 401 KAR 5:065, Section 2(5) 40 CFR 122.45(g) 401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2) 401 KAR 10:031, Section 4 401 KAR 5:045, Sections 2 and 3
Oil & Grease (mg/l)	N/R	N/R	5.6	5.9	401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A 401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)
pH (standard units)	N/R	N/R	6.0 (min)	9.0 (max)	401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A 401 KAR 10:031, Section 4
Free Cyanide (mg/l)	0.061	0.061	Report	Report	401 KAR 10:031, Section 4 401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)

3. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 001 - Process wastewater discharge consisting of low volume wastes (from the water treatment demineralizer, service water, and surface drains equipped with oil/water separators), cooling tower blowdown (internal Outfall 002), and sanitary wastewater (internal Outfall 003).

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Total Recoverable Metals (mg/l)	N/R	N/R	Report	Report	401 KAR 10:031, Section 4 401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Chronic Toxicity (TUC)	N/R	N/R	Report	1.00	401 KAR 10:029, Section 5 401 KAR 10:031, Section 2

The facility has not yet been constructed; therefore data regarding the quality of the effluent is unavailable. The values listed in the Reported Discharge column were obtained from the application and are the permittee's estimate of effluent levels.

The abbreviation N/R means Not Reported.

The term Total Recoverable Metals means Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

* The limits for Total Suspended Solids shall be applied as net limitations.

4. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 001 - Process wastewater discharge consisting of low volume wastes (from the water treatment demineralizer, service water, and surface drains equipped with oil/water separators), cooling tower blowdown (internal Outfall 002), and sanitary wastewater (internal Outfall 003).

b. Effluent Characteristics

Flow	Temperature	Total Suspended Solids
Oil & Grease	pH	Total Recoverable Metals
Free Cyanide	Hardness	Chronic Toxicity

c. Pertinent Factors

The electrical power generation related activities are subject to the "New Source Performance Standards" (NSPS) requirements of 40 CFR Part 423 - Steam Electric Power Generating Point Source Category.

A summarization of the effluent guidelines, water quality standards, assumptions, and calculations can be found in Fact Sheet Attachment B - Regulatory Requirements and Fact Sheet Attachment C - Steady State Toxics Wasteload Allocation Model (SSTWAM2004) - Reasonable Potential Analysis.

Outfalls 002 and 003 are internal outfalls to 001 and must meet the requirements for cooling tower blowdown (40 CFR 423.15) and secondary treatment standards, respectively, prior to comingling with other wastestreams.

Cash Creek Generation Station did not request a 316(a) variance for the thermal discharges.

Cash Creek Generation Station did not request a mixing zone in the vicinity of the proposed discharge.

d. Monitoring Requirements

The flow shall be monitored continuously by a recorder.

Temperature shall be monitored continuously by a recorder.

Monitoring for Total Suspended Solids, Oil & Grease, Free Cyanide, Hardness, and pH shall be conducted weekly by grab sample.

Total Recoverable Metals shall be monitored once per month by grab sample. The results of the analyses shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets showing the results for each metal shall be attached to the DMR.

Chronic Toxicity shall be monitored monthly by three (3) 24 hour composite samples collected at a frequency of one 24 hour composite every other day.

4. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow

The monitoring requirements for this parameter are consistent with requirements of 40 CFR 122.44(i)(1)(ii) as incorporated by reference in 401 KAR 5:065, Section 2(4).

Hardness, Free Cyanide, and Total Recoverable Metals

The monitoring requirements for these parameters are consistent with requirements of 40 CFR 122.44(i)(1)(i) as incorporated by reference in 401 KAR 5:065, Section 2(4) and 401 KAR 10:031, Section 4.

Temperature

The limit for this parameter is consistent with the requirements of 401 KAR 10:031, Section 4(1).

Total Suspended Solids

The limits for this parameter are consistent with the requirements of 40 CFR 122, Appendix A as incorporated by reference in 401 KAR 5:065, Section 2(6), 40 CFR 122.45(g) as incorporated by reference in 401 KAR 5:065, Section 2(5), 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3), 401 KAR 10:031, and 401 KAR 5:045, Section 2 and 3. These limits are representative of the NSPS requirements for the discharge of this pollutant in low volume wastes as specified in 40 CFR Parts 423.15(c) and the Division of Water's Best Professional Judgment (BPJ). Section 4 of 10:031 establishes water quality criteria for the protection of Kentucky's waters. Sections 2 and 3 of 5:045 require biochemically degradable wastewaters to receive secondary treatment.

Oil & Grease

The limits for this parameter are consistent with the requirements of 40 CFR 122, Appendix A as incorporated by reference in 401 KAR 5:065, Section 2(6) and 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). These limits are representative of the NSPS requirements for the discharge of this pollutant in low volume wastes as specified in 40 CFR Parts 423.15(c) and the Division of Water's Best Professional Judgment (BPJ).

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4 and 40 CFR 122, Appendix A as incorporated by reference in 401 KAR 5:065, Section 2(6). These limitations are representative of the NSPS requirements for those activities associated with steam electric power generation (40 CFR 423.15(a)) and water quality criteria for the protection of Kentucky's waters (Section 4 of 10:031).

Chronic Toxicity

The requirements for this parameter are consistent with the requirements of 401 KAR 10:029, Section 5 and 401 KAR 10:031, Sections 1 and 4.

5. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 002 - No treatment of cooling tower blowdown prior to commingling with Outfall 001 (internal outfall).

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow (MGD)	1.77	1.77	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Free Available Chlorine (mg/l)	N/R	N/R	0.2	0.5	401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A
Time of Chlorine Addition (minutes/unit/day)	N/R	N/R	N/A	120	401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A
Time of Oxidant Addition (minutes/unit/day)	N/R	200	N/A	120	401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2) 401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A
Total Residual Chlorine (mg/l)	N/R	N/R	0.2	0.2	401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2) 401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A
Total Residual Oxidants (mg/l)	N/R	N/R	Report	0.2	401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)
Total Chromium (mg/l)	0.22	0.22	0.2	0.2	401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A
Total Zinc (mg/l)	0.22	0.22	1.0	1.0	401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A
Priority Pollutants (mg/l)	N/R	N/R	No Detectable Amount		401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A

5. REPORTED DISCHARGE AND PROPOSED LIMITS - continued

Description of Discharge - Outfall 002 - No treatment of cooling tower blowdown prior to commingling with Outfall 001 (internal outfall).

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Temperature (°F)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
pH (Standard Units)	7.6	8.4	6.0 min	9.0 max	401 KAR 10:031, Section 4 401 KAR 5:065, Section 2(6) 40 CFR 122, Appendix A

The facility has not yet been constructed; therefore data regarding the quality of the blowdown is unavailable. The values listed in the Reported Discharge column were obtained from the application and are the permittee's estimate of effluent levels.

The abbreviation N/A means Not Applicable.

The abbreviation N/R means Not Reported.

The term Total Residual Oxidants (TRO) means the value obtained using the amperometric titration or DPD methods for total residual chlorine described in 40 CFR Part 136. In the event of addition of an oxidant other than chlorine, the permittee shall receive prior approval from the Division of Water permitting staff before the initial use.

Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time.

The term Priority Pollutants means the 126 priority pollutants listed in 40 CFR Part 423 Appendix A. See Fact Sheet Attachment B. Compliance with the limitations for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

6. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 002 - No treatment of cooling tower blowdown prior to commingling with Outfall 001.

b. Effluent Characteristics

Flow	Free Available Chlorine (FAC)
Time of Chlorine Addition	Time of Oxidant Addition
Total Residual Chlorine (TRC)	Total Residual Oxidants (TRO)
Total Chromium	Total Zinc
Priority Pollutants	Temperature
pH	

c. Pertinent Factors

Outfall 002 is an internal outfall to Outfall 001.

The electrical power generation related activities are subject to the "New Source Performance Standards" (NSPS) requirements of 40 CFR Part 423 - Steam Electric Power Generating Point Source Category.

A summarization of the effluent guidelines, water quality standards, assumptions, and calculations can be found in Fact Sheet Attachment B - Regulatory Requirements and Fact Sheet Attachment C - Steady State Toxics Wasteload Allocation Model (SSTWAM2004) - Reasonable Potential Analysis.

The reasonable potential analysis performed for the estimated effluent parameters at this outfall resulted in no limitation or monitoring requirements for Chloride, Fluoride, Nitrate-Nitrite (as N), Sulfate (as SO₄), Total Recoverable Barium, Total Recoverable Arsenic, Total Recoverable Chromium, and Phenol. The analysis also dictated that monitoring requirements are necessary for the following parameters: Total Recoverable Copper, Total Recoverable Lead, Total Recoverable Mercury, Total Recoverable Nickel, Total Recoverable Selenium, Total Recoverable Silver, and Total Recoverable Zinc. Each of the parameters requiring monitoring are included in the Total Recoverable Metals scan which has been placed on Outfall 001. Because Outfall 002 is an internal Outfall that ultimately mixes with the wastestreams of and discharges through Outfall 001, the Division will not be requiring duplicate monitoring of the effluent.

d. Monitoring Requirements

Flow and Temperature shall be monitored instantaneously once per week.

Monitoring for Total Residual Chlorine, Free Available Chlorine, Total Residual Oxidants, Time of Chlorine Addition, and Time of Oxidant Addition shall be conducted during periods of chlorination/oxidation, but no more frequently than once per week. Multiple grabs consisting of grab samples collected at the approximate beginning of FAC/TRO discharge and once every fifteen (15) minutes thereafter until the end of FAC/TRO discharge.

Total Chromium and Total Zinc shall be monitored monthly by grab sample.

6. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

d. Monitoring Requirements - continued

Priority Pollutants shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering calculations showing the results for each pollutant shall be attached to the DMR.

Monitoring for pH shall be conducted once per week by grab sample.

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Internal Monitoring Requirement

40 CFR 122.45(h) as incorporated by reference in 401 KAR 5:065, Section 2(5) authorizes the establishment of internal monitoring points to ensure compliance with applicable treatment requirements, which when commingling with other wastestreams will prevent measuring compliance.

Flow

The monitoring requirements for this parameter are consistent with the requirements of 40 CFR 122.44(i)(1)(ii) as incorporated by reference in 401 KAR 5:065, Section 2(4).

Temperature

The monitoring requirements for this parameter are consistent with the requirements of 40 CFR 122.44(i)(1)(i) as incorporated by reference in 401 KAR 5:065, Section 2(4).

Free Available Chlorine and Time of Chlorine Addition

The limits for this parameter are consistent with the requirements of 40 CFR 122, Appendix A as incorporated by reference in 401 KAR 5:065, Section 2(6). These limits are representative of the NSPS requirements for the discharge of this pollutant in cooling tower blowdown as specified in 40 CFR Parts 423.15(j)(2).

Total Residual Chlorine

The limits for this parameter are consistent with the requirements of 40 CFR 122, Appendix A as incorporated by reference in 401 KAR 5:065, Section 2(6) and 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). These limits are representative of the Division of Water's BPJ determination of BAT requirements for this parameter when discharged in cooling tower blowdown. The DOW based this determination on the requirement for cooling tower blowdown discharges specified in the NSPS requirements specified in 40 CFR Part 423.15(h)1.

6. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits - continued

Time of Oxidant Addition

The limits for this parameter are consistent with the requirements of 40 CFR 122, Appendix A as incorporated by reference in 401 KAR 5:065, Section 2(6) and 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). These limits are representative of the NSPS requirements for the addition of chlorine in cooling tower blowdown as specified in 40 CFR Parts 423.15(j)(2). It is the Best Professional Judgement (BPJ) of the Division of Water that this requirement is also applicable to the addition of other oxidants.

Total Residual Oxidants

The limits for this parameter are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). These limits are representative of the Division of Water's Best Professional Judgement (BPJ) determination of the NSPS requirements for the discharge of these pollutants in cooling tower blowdown.

Total Chromium, Total Zinc, and Priority Pollutants

The limits for these parameters are consistent with the requirements of 40 CFR 122, Appendix A as incorporated by reference in 401 KAR 5:065, Section 2(6). These limits are representative of the NSPS requirements for the discharge of these pollutants in cooling tower blowdown as specified in 40 CFR Part 423.15(j)(1).

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4 and 40 CFR 122, Appendix A as incorporated by reference in 401 KAR 5:065, Section 2(6). These limitations are representative of the NSPS requirements for those activities associated with steam electric power generation (40 CFR 423.15(a)) and water quality criteria for the protection of Kentucky's waters (Section 4 of 10:031).

7. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 003 - Sanitary wastewaters are treated by screening, activated sludge, sedimentation, and chlorine disinfection prior to commingling with Outfall 001.

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow (MGD)	0.004	0.004	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
BOD ₅ (mg/l)	30	45	30	45	401 KAR 10:031, Section 4 401 KAR 5:045, Sections 3 and 5
Total Suspended Solids (mg/l)	30	45	30	45	401 KAR 10:031, Section 4 401 KAR 5:045, Sections 2 and 3
Escherichia Coli (N/100 ml)	NR	NR	130	240	401 KAR 10:031, Section 7 401 KAR 5:045, Section 4 401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)
Ammonia Nitrogen (as mg/l N)	10	15	20	30	401 KAR 10:031, Section 4 401 KAR 5:045, Sections 3 and 5
Dissolved Oxygen (mg/l) (min)	N/R		Not less than 2.0		401 KAR 10:031, Section 4 401 KAR 5:045, Sections 3 and 5
Total Residual Chlorine (mg/l)	NR	NR	0.011	0.019	401 KAR 10:031, Section 4
pH (standard units)	6.0	9.0	6.0 (min)	9.0 (max)	401 KAR 10:031, Section 4 401 KAR 5:045, Section 4

The facility has not yet been constructed; therefore data regarding the quality of the discharge is unavailable. The values listed in the Reported Discharge column were obtained from the application and are the permittee's estimate of effluent levels.

The abbreviation BOD₅ means Biochemical Oxygen Demand (5-day).

The abbreviation NR means not reported on the Discharge Monitoring Report (DMR).

The effluent limitations for BOD₅ and Total Suspended Solids are Monthly Averages and Weekly Averages.

The effluent limitations for *Escherichia Coli* are 30 day and 7 day Geometric Means.

8. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 003 - Sanitary wastewaters are treated by screening, activated sludge, sedimentation, and chlorine disinfection prior to commingling with Outfall 001.

b. Effluent Characteristics

Flow	Biochemical Oxygen Demand (5-day)
Total Suspended Solids	<i>Escherichia Coli</i>
Ammonia Nitrogen	Dissolved Oxygen
Total Residual Chlorine (TRC)	pH

c. Pertinent Factors

On September 8, 2004 Kentucky's revised water quality standards, 401 KAR 10:031 became effective.

d. Monitoring Requirements

Flow shall be monitored instantaneously once per week.

Ammonia Nitrogen, Biochemical Oxygen Demand (5-day), and Total Suspended Solids, shall be monitored once per month by 8-hour composite sample.

Escherichia Coli, pH, Dissolved Oxygen and Total Residual Chlorine shall be monitored once per month by grab sample.

e. Justification of Conditions

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Secondary Treatment Standards

The requirement to meet secondary treatment standards prior to discharge to Outfall 001 is consistent with 401 KAR 5:045, Section 3.

Class One Certified Operator

The requirement for the sanitary wastewater plant to be operated by a class one certified operator is consistent with the requirements of 401 KAR 5:010, Sections 2 and 8.

Flow

The monitoring requirements for this parameter are consistent with the requirements of 40 CFR 122.44(i)(1)(ii) as incorporated by reference in 401 KAR 5:065, Section 2(4).

BOD₅, Ammonia Nitrogen, and Dissolved Oxygen

The limits for these parameters are consistent with the requirements of 401 KAR 10:031, Section 4, and 401 KAR 5:045, Sections 3 and 5. Section 4 of 10:031 establishes water quality criteria for the protection of Kentucky's waters.

8. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Conditions - continued

Total Suspended Solids

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4 and 5:045, Sections 2 and 3. Section 4 of 10:031 establishes water quality criteria for the protection of Kentucky's waters. Sections 2 and 3 of 5:045 require biochemically degradable wastewaters to receive secondary treatment.

Escherichia Coli

The limits for *Escherichia Coli* are consistent with the requirements of 401 KAR 10:031, Section 7, 401 KAR 5:045 Section 4 and 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). Although Fecal Coliform Bacteria has been used as an indicator of fecal contamination, it does contain other species that are not necessarily fecal in origin. EPA recommends *Escherichia Coli*, which is specific to fecal material from warm-blooded animals, as the best indicator of health risk from contact with recreational waters.

Total Residual Chlorine

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4 which establishes water quality criteria for the protection of Kentucky's waters.

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4 and 5:045, Section 4. Section 4 of 10:031 establishes water quality criteria for the protection of Kentucky's waters. Section 4 of 5:045 establishes the acceptable levels of these parameters for biochemically degradable wastewaters.

9. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 004 - Effluent from the slag landfill leachate pond and stormwater from the north portion of the slag landfill.

Effluent Characteristics	Reported Monthly Average	Discharge Daily Maximum	Proposed Monthly Average	Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (calculated MGD) (including leachate pond)	0.255 (0.605)	0.405 (2.195)	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Settleable Solids (ml/l)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Hardness (as mg/l CaCO ₃)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Oil & Grease (mg/l)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Total Recoverable Metals (mg/l)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i) 401 KAR 10:031, Section 4
Precipitation (inches)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
pH (Standard Units)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)

The facility has not yet been constructed; therefore data regarding the quality of the discharge is unavailable.

The abbreviation N/D means No Discharge.

The term Total Recoverable Metals means those metals listed on Form C, Section V, Part C - Metals, Cyanide, and Total Phenols: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 004 - Effluent from the slag landfill leachate pond and stormwater from the north portion of the slag landfill.

b. Effluent Characteristics

Flow	Settleable Solids
Hardness	Oil & Grease
pH	Precipitation
Total Recoverable Metals	

c. Pertinent Factors

Prior to discharge to the north stormwater pond, the effluent from the leachate pond will be analyzed for compliance with the Water Quality Standards. If the effluent meets all applicable standards it will be discharged to the north stormwater pond. Otherwise, it will be collected and hauled off-site for disposal.

A summarization of the effluent guidelines, water quality standards, assumptions, and calculations can be found in Fact Sheet Attachment B - Regulatory Requirements.

The reasonable potential analysis for the leachate pond effluent can be found in Fact Sheet Attachment C - Steady State Toxics Wasteload Allocation Model (SSTWAM2004) - Reasonable Potential Analysis. The analysis shows that for the estimated values of Total Recoverable Barium, Arsenic, Chromium, and Silver no monitoring or limitations would be required were the effluent discharged. For Total Recoverable Cadmium, Lead, Mercury, and Selenium the analysis recommends that monitoring be required. Because the effluent from Outfall 004 (through which the leachate could potentially be discharged) is required to be monitored for Total Recoverable Metals, it is not necessary to impose additional monitoring requirements at Outfall 004 due to the potential for leachate to be comingled with the stormwater runoff.

d. Monitoring Requirements

A log of daily accumulations of precipitation shall be maintained.

Instantaneous flow measurements shall be performed once per discharge, but no more frequently than once per month through any current or future point source.

Oil & Grease, Settleable Solids, Hardness, Total Recoverable Metals, and pH shall be monitored once per discharge by grab sample, but no more frequently than once per month through any current or future point source. The results of the analyses shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets showing the results for each metal shall be attached to the DMR.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow

The monitoring requirements for this parameter are consistent with the requirements of 40 CFR 122.44(i)(1)(ii) as incorporated by reference in 401 KAR 5:065, Section 2(4).

Precipitation, Settleable Solids, Hardness, Oil & Grease, and pH

The monitoring requirements for these parameters are consistent with the requirements of 40 CFR 122.44(i)(1)(i) as incorporated by reference in 401 KAR 5:065, Section 2(4).

Total Recoverable Metals

The monitoring requirements for these parameters are consistent with the requirements of 40 CFR 122.44(i)(1)(i) as incorporated by reference in 401 KAR 5:065, Section 2(4) and 401 KAR 10:031, Section 4.

11. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 005 - Stormwater from the south portion of the slag landfill.

Effluent Characteristics	Reported Monthly Average	Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (calculated MGD)	0.299	0.476	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Settleable Solids (ml/l)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Hardness (as mg/l CaCO ₃)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Oil & Grease (mg/l)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Total Recoverable Metals (mg/l)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i) 401 KAR 10:031, Section 4
Precipitation (inches)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
pH (Standard Units)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)

The facility has not yet been constructed; therefore data regarding the quality of the discharge is unavailable

The abbreviation N/R means Not Reported.

The term Total Recoverable Metals means those metals listed on Form C, Section V, Part C - Metals, Cyanide, and Total Phenols: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

12. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 005 - Stormwater from the south portion of the slag landfill.

b. Effluent Characteristics

Flow	Settleable Solids
Hardness	Total Recoverable Metals
Oil & Grease	Precipitation
pH	

c. Pertinent Factors

A summarization of the effluent guidelines, water quality standards, assumptions, and calculations can be found in Fact Sheet Attachment B - Regulatory Requirements.

d. Monitoring Requirements

A log of daily accumulations of precipitation shall be maintained.

Instantaneous flow measurements shall be performed once per discharge, but no more frequently than once per month through any current or future point source.

Oil & Grease, Settleable Solids, Hardness, Total Recoverable Metals, and pH shall be monitored once per discharge by grab sample, but no more frequently than once per month through any current or future point source. The results of the analyses shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets showing the results for each metal shall be attached to the DMR.

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow

The monitoring requirements for this parameter are consistent with the requirements of 40 CFR 122.44(i)(1)(ii) as incorporated by reference in 401 KAR 5:065, Section 2(4).

Precipitation, Settleable Solids, Hardness, Oil & Grease, and pH

The monitoring requirements for these parameters are consistent with the requirements of 40 CFR 122.44(i)(1)(i) as incorporated by reference in 401 KAR 5:065, Section 2(4).

Total Recoverable Metals

The monitoring requirements for these parameters are consistent with the requirements of 40 CFR 122.44(i)(1)(i) as incorporated by reference in 401 KAR 5:065, Section 2(4) and 401 KAR 10:031, Section 4.

13. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 006 - Plant intake.

Effluent Characteristics	Reported Monthly Average	Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	N/R	14.076	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Temperature (°F)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Hardness (as mg/l CaCO ₃)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
Total Suspended Solids (mg/l)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)
pH (Standard Units)	N/R	N/R	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(i)

The facility has not yet been constructed, therefore data regarding the quality of the intake is unavailable. The daily maximum is the estimated maximum withdrawal from the Green River.

The abbreviation N/R means Not Reported.

14. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 006 - Plant Intake.

b. Effluent Characteristics

Flow	Temperature
Hardness	Total Suspended Solids
pH	

c. Pertinent Factors

The unit is a new intake subject to the requirements of 40 CFR Part 125.80 through 125.89 Subpart I - "Requirements Applicable to Cooling Water Intake Structures for New Facilities Under Section 316(b) of the Act". The requirements of this rule can be found in Fact Sheet Attachment A.

d. Monitoring Requirements

Flow and Temperature shall be monitored continuously by recorder.

Hardness, Total Suspended Solids, and pH shall be monitored once per week by grab sample.

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow

The monitoring requirements for this parameter are consistent with the requirements of 40 CFR 122.44(i)(1)(ii) as incorporated by reference in 401 KAR 5:065, Section 2(4).

Temperature, Hardness, Total Suspended Solids, and pH

The monitoring requirements for these parameters are consistent with the requirements of 40 CFR 122.44(i)(1)(i) as incorporated by reference in 401 KAR 5:065, Section 2(4).

15. REPORTED DISCHARGE AND PROPOSED LIMITS

Description of Discharge - Outfall 007 - This outfall is being removed from the permit. This outfall was for previously for the discharge of metal cleaning wastes. There shall be no discharge of metal cleaning wastes. When such wastes are generated the permittee will ship off site for treatment and disposal.

Effluent Characteristics	Reported Discharge		Proposed Limits		Applicable Water Quality Criteria and/or Effluent Guidelines
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	
Flow (MGD)	N/R	N/R	Remove from Permit		401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)
Copper, Total (mg/l)	N/R	N/R	Remove from Permit		401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)
Iron, Total (mg/l)	N/R	N/R	Remove from Permit		401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)
Total Suspended Solids (mg/l)	N/R	N/R	Remove from Permit		401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)
Oil & Grease (mg/l)	N/R	N/R	Remove from Permit		401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)
pH (Standard Units)	N/R	N/R	Remove from Permit		401 KAR 5:080, Section 2(3) 40 CFR 125.3(c)(2)

The abbreviation N/R means Not Reported.

16. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 007 - This outfall is being removed from the permit. This outfall was for previously for the discharge of metal cleaning wastes. There shall be no discharge of metal cleaning wastes. When such wastes are generated the permittee will ship off site for treatment and disposal.

b. Effluent Characteristics

None

c. Pertinent Factors

In the application materials, the permittee stated that if this wastestream is generated it will be collected and shipped off-site. This permit prohibits the discharge of metal cleaning wastes.

d. Monitoring Requirements

None

e. Justification of Limits

The Kentucky Administrative Regulations (KARs) cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes (KRSs).

Flow, Total Suspended Solids, Oil & Grease, Total Copper, Total Iron, and pH

The limits and monitoring requirements for these parameters are being removed in accordance with 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). It is the Division of Water's Best Professional Judgment (BPJ) determination that the NSPS for the discharge of these pollutants in metal cleaning wastes shall not apply while the permittee is not discharging these wastes.

17. **ANTIDEGRADATION**

The conditions of 401 KAR 10:029, Section 1 have been satisfied. This permitting action is the issuance of a new KPDES permit authorizing new discharges. This permit will meet the requirements of intergovernmental coordination in the Cabinet's public participation process. The Cabinet finds that the lowering of water quality in these receiving waters accommodates important economic and social development in the area in which these waters are located. This finding is based on the information submitted by the permittee in the form of an alternatives analysis and socioeconomic demonstration (Form HQAA) and supportive information pursuant to 401 KAR 10:030, Section 1(3).

18. **PROPOSED COMPLIANCE SCHEDULE FOR ATTAINING EFFLUENT LIMITATIONS**

The permittee shall comply with the effluent limitations and permit conditions by the effective date of the permit.

19. **PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE**

Best Management Practices (BMP) Plan

Pursuant to 401 KAR 5:065, Section 2, a BMP requirement shall be included: to control or abate the discharge of pollutants from ancillary areas containing toxic or hazardous substances or those substances which could result in an environmental emergency; where numeric effluent limitations are infeasible; or to carry out the purposes and intent of KRS 224. The facility has several areas where support activities occur which have a potential of the discharge of such substances through storm water runoff or spillage. Some of these areas will drain to present wastewater treatment plants, others will not.

Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical not previously reported for mollusk control or other purpose, the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals to the Division of Water for review and establishment of appropriate control parameters.

Polychlorinated Biphenyls

Pursuant to the requirements of 40 CFR Part 423.13(a), there shall be no discharge, from any point source, of Polychlorinated Biphenyl compounds such as those commonly used in transformer fluids. The permittee shall implement this requirement as a specific section of the BMP plan developed for this station.

19. **PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE - continued**

Start Up Period

Pursuant to 40 CFR 122.29(d)(4) as incorporated by reference in 401 KAR 5:080, Section 5(f) the effluent conditions of the permit shall be achieved in the shortest time period feasible; but shall not exceed ninety (90) days after the start up of the plant.

Outfall Signage

As a member of ORSANCO (Ohio River Valley Sanitation Commission) the Commonwealth of Kentucky through the Division of Water implements a requirement that the permittee post a permanent marker at each discharge point to the Ohio River. It is the Best Professional Judgment of the Division of Water, 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3), that all permittees post a marker at all discharge locations and/or monitoring points. The ORSANCO requirements for the marker specify it to be at least 2 feet by 2 feet in size and a minimum of 3 feet above ground level with the Permittee Name and KPDES permit and outfall numbers in 2 inch letters. For internal monitoring points the marker shall be of sufficient size to include the outfall number in 2 inch letters and is to be posted as near as possible to the actual sampling location.

Effluent Data

Pursuant to 40 CFR 122.21(k)(5)(vi), the permittee must submit complete Tables V-A, V-B, and V-C from Part V of KPDES Form C within two (2) years of the commencement of operation. Tables shall be completed for each outfall and the leachate pond and must contain a minimum of five samples. The permittee must submit the required data to the Division of Water Central Office.

Section 316(b) Cooling Water Intake Requirements

Pursuant to the "New Facility" definition found in 40 CFR §125.83, the Cash Creek Generation Station facility is a new facility and is subject to the requirements of 40 CFR § 125.84(a)(1) which requires the permittee to comply with either Track I or Track II. Cash Creek Generation Station has opted to follow Track I requirements for new facilities withdrawing more than 10 MGD.

Track I Requirements

- (1) The intake flow must be reduced, at a minimum, to a level commensurate with that which can be attained by a closed-cycle recirculating cooling water system.
- (2) The maximum through-screen design intake velocity shall not exceed 0.5 ft/s: A T-type intake screen design with 3.18 mm slit sizing and sixty four percent (64%) open screen area is proposed with a through-screen velocity of less than 0.5 ft/s at each point along the screen.
- (3) The maximum total design intake flow from all cooling water intake structures at the facility shall not exceed five (5) percent of the source water annual mean flow: Pursuant to 40 CFR § 125.83, the "Annual mean flow" means the average of daily flows over a calendar year. Historical data (up to 10 years) must be used where available. Using data available through the USGS Kentucky Water Science Center (<http://kygeonet.ky.gov>) the average annual mean flow of the Green river at the point of intake is 6,850 MGD. With a maximum proposed design intake rate of 14.076 MGD the resultant percentage of cooling water intake to source water annual mean flow is 0.20%.

19. PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE - continued

Section 316(b) Cooling Water Intake Requirements - continued

Track I Requirements - continued

- (4) Additional design and construction technologies are necessary to minimize impingement mortality of fish and shellfish if (a) there are threatened or endangered or otherwise protected species in the area of the intake, (b) there are migratory and/or sport or commercial species in the area of the intake, or (c) the permitting authority determines that after meeting the technology based performance standards the facility poses an unacceptable stress to a protected species, the habitat of a protected species, or a species of concern: None of these conditions exist in the Green River at the point of intake.
- (5) Select and implement design and construction technologies or operational measures for minimizing entrainment of entrainable life stages of fish and shellfish if (a) there are threatened or endangered or otherwise protected species in the area of the intake, (b) the permitting authority determines that after meeting the technology based performance standards the facility poses an unacceptable stress to a protected species, the habitat of a protected species, or a species of concern: None of these conditions exist in the Green River at the point of intake.
- (6) The application information required in 40 CFR 122.21(r) and § 125.86(b) must be submitted. This information has been provided by the permittee.
- (7) The following monitoring requirements must be implemented:
 - (a) Biological Monitoring - Monitoring of impingement and entrainment of commercial, recreational, and forage base fish and shellfish shall be conducted at the following rates for at least two (2) years after the facility has commenced operation. After this initial period the permittee may request less frequent sampling.
 - (1) Impingement Sampling - No less than once per month during cooling water intake structure operation impingement rates shall be determined by simple enumeration of each species over a 24- hour period.
 - (2) Entrainment Sampling - During periods where operation of the cooling water intake structure coincides with the primary periods of reproduction, larval recruitment, and peak abundance, bi-weekly determination of entrainment rates shall be determined by simple enumeration of each species over a 24-hour period.
 - (b) Velocity Monitoring - Monitoring of head loss across the screens and correlation of the measured value with the design intake velocity shall be conducted weekly. The maximum head loss across the screen for each cooling water intake structure shall not exceed 0.5 ft/s.

19. PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE - continued

Section 316(b) Cooling Water Intake Requirements - continued

Additional Requirements

- (c) Visual or Remote Inspections - Weekly monitoring of the cooling water intake structure during operation shall be conducted to ensure that any design and construction technologies required by §125.84(b)(4) and (5) are functioning as designed and are being appropriately maintained and operated. This inspection may take the form of either visual inspections or the use of remote monitoring devices. As previously indicated under items 4 and 5 of the Track I Requirements these conditions do not exist, however it is the "Best Professional Judgment" of the Division of Water that this type of inspection of the screens be conducted.
- (8) Records shall be maintained and submitted as follows:
 - (a) Records of all data used to complete the permit application and show compliance with the requirements, any supplemental information developed under §125.86, and any compliance monitoring data submitted under §125.87, for a period of at least three (3) years.
 - (b) A yearly status report consisting of the biological monitoring records for each cooling water intake structure; the velocity and head loss monitoring records for each cooling water intake structure, and the records of visual or remote inspections.
- (1) Within 30 days of completion of the facility, the engineer must certify, in writing, to the Division of Water/Surface Water Permits Branch that the cooling water system and intake screens have been constructed in accordance with design proposed in the KPDES permit application.
- (2) Monthly reports of the biological monitoring records for each cooling water intake structure; the velocity and head loss monitoring records for each cooling water intake structure, and the records of visual or remote inspections shall be submitted with the monthly DMRs using the 316(b) Reporting Sheets (See Fact Sheet Attachment D, Microsoft Excel Workbook - provided by the Division of Water).
- (3) The annual report of the biological monitoring records for each cooling water intake structure; the velocity and head loss monitoring records for each cooling water intake structure, and the records of visual or remote inspections shall be submitted by January 28th of the following year using the 316(b) Reporting Sheets (See Fact Sheet Attachment D, Microsoft Excel Workbook - provided by the Division of Water).
- (4) The permittee may request a reduction in the frequency of the biological and velocity monitoring and visual inspection requirements after an initial monitoring period of two (2) years.

19. **PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE - continued**

Selective Catalytic Reduction Devices or Systems (SCRs) and Nonselective Catalytic Reduction Devices or Systems (NSCRs)

In response to recent Clean Air Act amendments, the installation of these devices for NOx reduction may become necessary. Associated with the installation and operation of these units, an "ammonia slip" may occur resulting in the discharge of ammonia. The impact of such an occurrence on the environment is not known. Therefore, the permittee shall develop and implement an Ammonia Monitoring Plan. The plan shall be submitted to the Division of Water within ninety (90) days of the installation of these devices and shall include a minimum influent and effluent monitoring of each unit on a monthly basis with submission of the data as a quarterly report.

20. **PERMIT DURATION**

This permit modification shall expire on March 31, 2015 (five (5) years from date of initial permit issuance). This facility is in the Tradewater/Green River Basin Management Unit as per the Kentucky Watershed Management Framework.

21. **PERMIT INFORMATION**

The application, draft permit fact sheet, public notice, comments received, and additional information is available by writing the Division of Water at 200 Fair Oaks Lane, Frankfort, Kentucky 40601.

22. **REFERENCES AND CITED DOCUMENTS**

All material and documents referenced or cited in this fact sheet are a part of the permit information as described above and are readily available at the Division of Water Central Office. Information regarding these materials may be obtained from the person listed below.

23. **CONTACT**

For further information contact the individual identified on the Public Notice or the Permit Writer - Sara Beard at (502) 564-3410, extension 4925 or e-mail Sara.Beard@ky.gov.

24. **PUBLIC NOTICE INFORMATION**

Please refer to the attached Public Notice for details regarding the procedures for a final permit decision, deadline for comments and other information required by KAR 5:075, Section 4(2)(e).

KPDES



KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KY0107000

AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Cash Creek Generation, LLC
C/O The Erora Group
4350 Brownsboro Road, Suite 110
Louisville, Kentucky 40207

is authorized to discharge from a facility located at

Cash Creek Generation Station
KY 1078
Henderson, Henderson County, Kentucky

to receiving waters named

Outfall discharges to the Green River. Outfalls 002 and 003 are internal outfalls to 001.

Outfalls 004 and 005 discharge to an unnamed tributary of Cash Creek.

Outfall 006 is the plant intake and is located in the Green River.

in accordance with effluent limitations, monitoring requirements and other conditions set forth in PARTS I, II, III, IV, and V hereof. The permit consists of this cover sheet, and PART I 12 pages, PART II 1 page, PART III 2 page, PART IV 4 pages, and PART V 3 pages.

This permit shall become effective on April 1, 2010

This modified permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,
March 31, 2015.

Date Signed

Sandra L. Gruzesky, Director
Division of Water

A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 001 - Process wastewater discharge consisting of low volume wastes (from the water treatment demineralizer, service water, and surface drains equipped with oil/water separators), cooling tower blowdown (internal Outfall 002), and sanitary wastewater (internal Outfall 003).

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Avg.</u>	<u>Daily Max.</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow (MGD)	Report	Report	Continuous	Recorder
Hardness (as mg/l CaCO ₃)	Report	Report	1/Week	Grab
Temperature (°F)	Report	89	Continuous	Recorder
*Total Suspended Solids (mg/l)	30	50	1/Week	Grab
Oil & Grease (mg/l)	5.6	5.9	1/Week	Grab
Free Cyanide (mg/l)	Report	Report	1/Week	Grab
Total Recoverable Metals (mg/l)	Report	Report	1/Month	Grab
Chronic Toxicity (TU _c)	N/A	1.00	1/Month	3 24 hour Composite

The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units, and shall be monitored 1/week by grab sample.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point after final treatment, but prior to actual discharge to or mixing with the wastestreams from other outfalls.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

The effluent characteristic "Total Recoverable Metals" means those metals listed on Form C, Part C - Metals, Cyanide, and Total Phenols (Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc). To report the results of the analyses for this parameter, the permittee shall total the results of the analyses for each individual parameter, and report that aggregate value on the DMR. The laboratory bench sheets showing the results for each parameter shall be attached to the DMR.

* The limits for Total Suspended Solids shall be applied as net limitations. The following formula shall be used to determine compliance: $TSS_{Net} = TSS_{001 \text{ discharge}} - TSS_{006 \text{ intake}}$.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: Outfall 002 - No treatment of cooling tower blowdown prior to commingling with Outfall 001 (internal outfall).

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Avg.</u>	<u>Daily Max.</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow (MGD)	Report	Report	1/Week	Instantaneous
Free Available Chlorine (mg/l)	0.2	0.5	1/Occurrence	Multiple Grab
Time of Chlorine Addition (minutes/unit/day)	N/A	120	1/Occurrence	Multiple Grab
Time of Oxidant Addition (minutes/unit/day)	N/A	120	1/Occurrence	Multiple Grab
Total Residual Chlorine (mg/l)	0.2	0.2	1/Occurrence	Multiple Grab
Total Residual Oxidants (mg/l)	Report	0.2	1/Occurrence	Multiple Grab
Total Chromium (mg/l)	0.2	0.2	1/Month	Grab
Total Zinc (mg/l)	1.0	1.0	1/Month	Grab
Priority Pollutants (mg/l)	No Detectable Amounts		1/Year	Grab
Temperature (°F)	N/A	89	1/Week	Instantaneous

The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/Week by grab sample.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point after final treatment, but prior to actual discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

The term Total Residual Oxidants (TRO) means the value obtained using the amperometric titration or DPD methods for (minutes/unit/day) the permittee shall receive prior approval from the Division of Water permitting staff before the initial use.

The measurement frequency "Occurrence" means during periods of chlorination or oxidant addition, but no more frequent than once per week.

A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - continued

The sample type "Multiple Grab" means grab samples collected at the approximate beginning of oxidant discharge and once every fifteen (15) minutes thereafter until the end of oxidant discharge.

Priority Pollutants shall be monitored annually by grab sample or by engineering calculations. The results of the analyses/engineering calculations shall be totaled and reported as a single concentration on the DMR. The laboratory bench sheets/engineering calculations showing the results for each pollutant shall be attached to the DMR. The term Priority Pollutants means the 126 priority pollutants listed in 40 CFR Part 423.

A3. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 003 - Sanitary wastewaters are treated by screening, activated sludge, sedimentation, and chlorine disinfection prior to commingling with Outfall 001.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Avg.</u>	<u>Daily Max.</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow (MGD)	Report	Report	1/Week	Instantaneous
BOD ₅ (mg/l)	30	45	1/Month	8-hr Composite
Total Suspended Solids (mg/l)	30	45	1/Month	8-hr Composite
Escherichia Coli (N/100 ml)	130	240	1/Month	Grab
Ammonia Nitrogen (as mg/l N)	20	30	1/Month	8-hr Composite
Dissolved Oxygen (mg/l) (min)	Not less than 2.0		1/Month	Grab
Total Residual Chlorine (mg/l)	0.011	0.019	1/Month	Grab

The pH of the effluent shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/Month by grab sample.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point after final treatment, but prior to actual discharge to or mixing with other wastewaters.

The abbreviation BOD₅ means Biochemical Oxygen Demand (5-day).

The effluent limitations for BOD₅ and Total Suspended Solids are Monthly Averages and Weekly Averages.

The effluent limitations for *Escherichia Coli* are 30 day and 7 day Geometric Means.

A4. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 004 - Effluent from the slag landfill leachate pond and stormwater from the north portion of the slag landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Avg.</u>	<u>Daily Max.</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow (MGD)	Report	Report	1/Discharge	Instantaneous
Settleable Solids (mg/l)	Report	Report	1/Discharge	Grab
Hardness (as mg/l CaCO ₃)	Report	Report	1/Discharge	Grab
Oil & Grease (mg/l)	Report	Report	1/Discharge	Grab
Total Recoverable Metals (mg/l)	Report	Report	1/Discharge	Grab
Precipitation (inches)	Report	Report	1/Day	Grab

The minimum and maximum pH of the effluent shall monitored 1/Discharge by grab sample and reported in standard units.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point after final treatment, but prior to actual discharge to or mixing with other wastewaters.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

The monitoring frequency for this outfall is once per discharge for all parameters except precipitation. Should more than one (1) discharge occur during a given month, the permittee will be responsible for collecting samples for at least one of those discharges. When reporting the precipitation amounts for this outfall, the permittee shall report the volume of precipitation which produced the discharge.

The effluent characteristic "Total Recoverable Metals" means those metals listed on Form C, Part C - Metals, Cyanide, and Total Phenols (Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc). To report the results of the analyses for this parameter, the permittee shall total the results of the analyses for each individual parameter, and report that aggregate value on the DMR. The laboratory bench sheets showing the results for each parameter shall be attached to the DMR.

Prior to discharge to the north stormwater pond, the effluent from the leachate pond will be analyzed for compliance with the Water Quality Standards. If the effluent meets all applicable standards it will be discharged to the north stormwater pond. Otherwise, it will be hauled off-site for disposal.

A5. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 005 - Stormwater from the south portion of the slag landfill.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly Avg.</u>	<u>Daily Max.</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow (MGD)	Report	Report	1/Discharge	Instantaneous
Settleable Solids (mg/l)	Report	Report	1/Discharge	Grab
Hardness (as mg/l CaCO ₃)	Report	Report	1/Discharge	Grab
Oil & Grease (mg/l)	Report	Report	1/Discharge	Grab
Total Recoverable Metals (mg/l)	Report	Report	1/Discharge	Grab
Precipitation (inches)	Report	Report	1/Day	Grab

The minimum and maximum pH of the effluent shall monitored 1/Discharge by grab sample and reported in standard units.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point after final treatment, but prior to actual discharge to or mixing with other wastewaters.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

The monitoring frequency for this outfall is once per discharge for all parameters except precipitation. Should more than one (1) discharge occur during a given month, the permittee will be responsible for collecting samples for at least one of those discharges. When reporting the precipitation amounts for this outfall, the permittee shall report the volume of precipitation which produced the discharge.

The effluent characteristic "Total Recoverable Metals" means those metals listed on Form C, Part C - Metals, Cyanide, and Total Phenols (Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc). To report the results of the analyses for this parameter, the permittee shall total the results of the analyses for each individual parameter, and report that aggregate value on the DMR. The laboratory bench sheets showing the results for each parameter shall be attached to the DMR.

A6. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 006 - Plant intake.

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>	
	<u>Monthly</u> <u>Avg.</u>	<u>Daily</u> <u>Max.</u>	<u>Measurement</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>
Flow (MGD)	Report	Report	Continuous	Recorder
Temperature (°F)	Report	Report	Continuous	Recorder
Hardness (as mg/l CaCO ₃)	Report	Report	1/Week	Grab
Total Suspended Solids (mg/l)	Report	Report	1/Week	Grab

The minimum and maximum pH of the influent shall monitored 1/Week by grab sample and reported in standard units.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: Plant intake structure.

B. Schedule of Compliance

The permittee shall comply with the effluent limitations and permit conditions by the effective date of the permit.

C. Cooling Water Additives, FIFRA, and Mollusk Control

The discharge of any product registered under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) in cooling water which ultimately may be released to the waters of the Commonwealth is prohibited, except Herbicides, unless specifically identified and authorized by the KPDES permit. In the event the permittee needs to use a biocide or chemical, not previously reported, for mollusk control or other purpose the permittee shall submit sufficient information, a minimum of thirty (30) days prior to the commencement of use of said biocides or chemicals, to the Division of Water for review and establishment of appropriate control parameters. Such information requirements shall include:

1. Name and general composition of biocide or chemical,
2. Any and all aquatic organism toxicity data,
3. Quantities to be used,
4. Frequencies of use,
5. Proposed discharge concentrations, and
6. EPA registration number, if applicable.

D. Polychlorinated Biphenyls

Pursuant to the requirements of 40 CFR Part 423.13(a), there shall be no discharge from any point source, of Polychlorinated Biphenyl compounds such as those commonly used in transformer fluids. The permittee shall implement this requirement as a specific section of the BMP plan developed for this station.

E. Priority Pollutants

APPENDIX A TO PART 403 – 126 PRIORITY POLLUTANTS	
001 Acenaphthene	067 Butyl benzyl phthalate
002 Acrolein	068 Di-N-Butyl Phthalate
003 Acrylonitrile	069 Di-n-octyl phthalate
004 Benzene	070 Diethyl Phthalate
005 Benzidine	071 Dimethyl phthalate
006 Carbon tetrachloride (tetrachloromethane)	072 1,2-benzanthracene (benzo(a)anthracene)
007 Chlorobenzene	073 Benzo(a)pyrene (3,4-benzo-pyrene)
008 1,2,4-trichlorobenzene	074 3,4-Benzofluoranthene (benzo(b)fluoranthene)
009 Hexachlorobenzene	075 11,12-benzofluoranthene (benzo(b)fluoranthene)
010 1,2-dichloroethane	076 Chrysene
011 1,1,1-trichloroethane	077 Acenaphthylene
012 Hexachloroethane	078 Anthracene
013 1,1-dichloroethane	079 1,12-benzoperylene (benzo(ghi) perylene)
014 1,1,2-trichloroethane	080 Fluorene
015 1,1,2,2-tetrachloroethane	081 Phenanthrene
016 Chloroethane	082 1,2,5,6-dibenzanthracene (dibenzo(,h) anthracene)
018 Bis(2-chloroethyl) ether	083 Indeno (,1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)
019 2-chloroethyl vinyl ether (mixed)	084 Pyrene
020 2-chloronaphthalene	085 Tetrachloroethylene
021 2,4, 6-trichlorophenol	086 Toluene
022 Parachlorometa cresol	087 Trichloroethylene
023 Chloroform (trichloromethane)	088 Vinyl chloride (chloroethylene)
024 2-chlorophenol	089 Aldrin
025 1,2-dichlorobenzene	090 Dieldrin
026 1,3-dichlorobenzene	091 Chlordane (technical mixture and metabolites)
027 1,4-dichlorobenzene	092 4,4-DDT
028 3,3-dichlorobenzidine	093 4,4-DDE (p,p-DDX)
029 1,1-dichloroethylene	094 4,4-DDD (p,p-TDE)
030 1,2-trans-dichloroethylene	095 Alpha-endosulfan
031 2,4-dichlorophenol	096 Beta-endosulfan
032 1,2-dichloropropane	097 Endosulfan sulfate
033 1,2-dichloropropylene (1,3-dichloropropene)	098 Endrin
034 2,4-dimethylphenol	099 Endrin aldehyde
035 2,4-dinitrotoluene	100 Heptachlor
036 2,6-dinitrotoluene	101 Heptachlor epoxide (BHC-hexachlorocyclohexane)
037 1,2-diphenylhydrazine	102 Alpha-BHC
038 Ethylbenzene	103 Beta-BHC
039 Fluoranthene	104 Gamma-BHC (lindane)
040 4-chlorophenyl phenyl ether	105 Delta-BHC (PCB-polychlorinated biphenyls)
041 4-bromophenyl phenyl ether	106 PCB-1242 (Arochlor 1242)
042 Bis(2-chloroisopropyl) ether	107 PCB-1254 (Arochlor 1254)
043 Bis(2-chloroethoxy) methane	108 PCB-1221 (Arochlor 1221)
044 Methylene chloride (dichloromethane)	109 PCB-1232 (Arochlor 1232)
045 Methyl chloride (dichloromethane)	110 PCB-1248 (Arochlor 1248)
046 Methyl bromide (bromomethane)	111 PCB-1260 (Arochlor 1260)
047 Bromoform (tribromomethane)	112 PCB-1016 (Arochlor 1016)
048 Dichlorobromomethane	113 Toxaphene
051 Chlorodibromomethane	114 Antimony
052 Hexachlorobutadiene	115 Arsenic
053 Hexachloromyclopentadiene	116 Asbestos
054 Isophorone	117 Beryllium
055 Naphthalene	118 Cadmium
056 Nitrobenzene	119 Chromium
057 2-nitrophenol	120 Copper
058 4-nitrophenol	121 Cyanide, Total
059 2,4-dinitrophenol	122 Lead
060 4,6-dinitro-o-cresol	123 Mercury
061 N-nitrosodimethylamine	124 Nickel
062 N-nitrosodiphenylamine	125 Selenium
063 N-nitrosodi-n-propylamin	126 Silver
064 Pentachlorophenol	127 Thallium
065 Phenol	128 Zinc
066 Bis(2-ethylhexyl) phthalate	129 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

F. Section 316(b) Cooling Water Intake Requirements

Pursuant to the "New Facility" definition found in 40 CFR §125.83, the Cash Creek Generation Station facility is a new facility and is subject to the requirements of 40 CFR § 125.84(a)(1) which requires the permittee to comply with either Track I or Track II. Cash Creek Generation Station has opted to follow Track I requirements for new facilities withdrawing 2 MGD or more and less than 10 MGD.

Track I Requirements

- (1) The intake flow must be reduced, at a minimum, to a level commensurate with that which can be attained by a closed-cycle recirculating cooling water system.
- (2) The maximum through-screen design intake velocity shall not exceed 0.5 ft/s.
- (3) The maximum total design intake flow from all cooling water intake structures at the facility shall not exceed five (5) percent of the source water annual mean flow: Pursuant to 40 CFR § 125.83, the "Annual mean flow" means the average of daily flows over a calendar year. Historical data (up to 10 years) must be used where available.
- (4) Additional design and construction technologies are necessary to minimize impingement mortality of fish and shellfish if (a) there are threatened or endangered or otherwise protected species in the area of the intake, (b) there are migratory and/or sport or commercial species in the area of the intake, or (c) the permitting authority determines that after meeting the technology based performance standards the facility poses an unacceptable stress to a protected species, the habitat of a protected species, or a species of concern.
- (5) Select and implement design and construction technologies or operational measures for minimizing entrainment of entrainable life stages of fish and shellfish.
- (6) The application information required in 40 CFR 122.21(r) and § 125.86(b) must be submitted.
- (7) The following monitoring requirements must be implemented:
 - (a) Biological Monitoring - Monitoring of impingement and entrainment of commercial, recreational, and forage base fish and shellfish shall be conducted at the following rates for at least two (2) years after the facility has commenced operation. After this initial period the permittee may request less frequent sampling.
 - (1) Impingement Sampling - Once per month during cooling water intake structure operation impingement rates shall be determined by simple enumeration of each species over a 24-hour period.
 - (2) Entrainment Sampling - During periods where operation of the cooling water intake structure coincides with the primary periods of reproduction, larval recruitment, and peak abundance bi-weekly determination of entrainment rates shall be determined by simple enumeration of each species over a 24-hour period.

F. Section 316(b) Cooling Water Intake Requirements - continued

Track I Requirements - continued

- (b) Velocity Monitoring - Monitoring of head loss across the screens and correlation of the measured value with the design intake velocity shall be conducted weekly. The maximum head loss across the screen for each cooling water intake structure shall not exceed 0.5 ft/s.
 - (c) Visual or Remote Inspections - Weekly monitoring of the cooling water intake structure during operation shall be conducted to ensure that any design and construction technologies required by §125.84(b)(4) and (5) are functioning as designed and are being appropriately maintained and operated. This inspection may take the form of either visual inspections or the use of remote monitoring devices. As previously indicated under items 4 and 5 of the Track I Requirements these conditions do not exist, however it is the "Best Professional Judgment" of the Division of Water that this type of inspection of the screens be conducted.
- (8) Records shall be maintained and submitted as follows:
- (a) Records of all data used to complete the permit application and show compliance with the requirements, any supplemental information developed under §125.86, and any compliance monitoring data submitted under §125.87, for a period of at least three (3) years.
 - (b) A yearly status report consisting of the biological monitoring records for each cooling water intake structure; the velocity and head loss monitoring records for each cooling water intake structure, and the records of visual or remote inspections.

Additional Requirements

- (1) Within 30 days of completion of the facility, the engineer must certify, in writing, to the Division of Water/Surface Water Permits Branch that the cooling water system and intake screens have been constructed in accordance with design proposed in the KPDES permit application.
- (2) Monthly reports of the biological monitoring records for each cooling water intake structure; the velocity and head loss monitoring records for each cooling water intake structure, and the records of visual or remote inspections shall be submitted with the monthly DMRs using the 316(b) Reporting Sheets (See Fact Sheet Attachment D, Microsoft Excel Workbook - provided by the Division of Water).
- (3) The annual report of the biological monitoring records for each cooling water intake structure; the velocity and head loss monitoring records for each cooling water intake structure, and the records of visual or remote inspections shall be submitted by January 28th of the following year using the 316(b) Reporting Sheets (See Fact Sheet Attachment D, Microsoft Excel Workbook - provided by the Division of Water).
- (4) The permittee may request a reduction in the frequency of the biological and velocity monitoring and visual inspection requirements after an initial monitoring period of two (2) years.

G. Selective Catalytic Reduction Devices or Systems (SCRs) and Nonselective Catalytic Reduction Devices or Systems (NSCRs)

In response to recent Clean Air Act amendments, the installation of these devices for NO_x reduction may become necessary. Associated with the installation and operation of these units, an "ammonia slip" may occur resulting in the discharge of ammonia. The impact of such an occurrence on the environment is not known. Therefore, the permittee shall develop and implement an Ammonia Monitoring Plan. The plan shall be submitted to the Division of Water within ninety (90) days of the installation of these devices and shall include a minimum influent and effluent monitoring of each unit on a monthly basis with submission of the data as a quarterly report.

PART II - STANDARD CONDITIONS FOR KPDES PERMIT

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

All conditions of 40 CFR 122.41 (401 KAR 5:065, Section 2(1)) are hereby incorporated by reference as conditions of this permit.

For existing manufacturing, commercial, mining and silvicultural discharges the conditions of 40 CFR 122.42 (a) (401 KAR 5:065, Section (2)) are hereby incorporated as conditions of this permit.

PART III - OTHER REQUIREMENTS

A. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water
Madisonville Regional Office
625 Hospital Drive
Madisonville, Kentucky 42431
ATTN: Supervisor

Energy and Environment Cabinet
Dept. for Environmental Protection
Division of Water/Surface Water Permits Branch
200 Fair Oaks Lane
Frankfort, Kentucky 40601

B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:085, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

C. Outfall Signage

The permittee shall post a permanent marker at all discharge locations and/or monitoring points. The marker shall be at least 2 feet by 2 feet in size and a minimum of 3 feet above ground level with the Permittee Name and KPDES permit and outfall numbers in 2 inch letters. For internal monitoring points the marker shall be of sufficient size to include the outfall number in 2 inch letters and shall be posted as near as possible to the actual sampling location.

D. Start Up Period

The effluent conditions of the permit shall be achieved in the shortest time period feasible; but shall not exceed ninety (90) days after the start up of the plant.

E. Effluent Data

Pursuant to 40 CFR 122.21(k)(5)(vi), the permittee must submit complete Tables V-A, V-B, and V-C from Part V of KPDES Form C within two (2) years of the commencement of operation. Tables shall be completed for each outfall and the leachate pond and must contain a minimum of five samples. The permittee must submit the required data to the Division of Water Central Office.

PART II - OTHER REQUIREMENTS

F. Metal Cleaning Wastes

In the original application materials, the permittee stated that metal cleaning wastes are generated they will be collected and shipped off-site for treatment and disposal. As a result, former Outfall 007 has been removed from the permit. There shall be no discharge of metal cleaning wastes as this permit specifically prohibits it.

PART IV
CHRONIC CONCERNS
Biomonitoring

In accordance with PART I of this permit, the permittee shall initiate, within 30 days of the commencement of operations, or continue the series of tests described below to evaluate wastewater toxicity of the discharge from Outfall 001.

1. Test Requirements

A. The permittee shall perform one short-term static-renewal fathead minnow (Pimephales promelas) growth test and one short-term static-renewal water flea (Ceriodaphnia dubia) life-cycle test. Tests shall be performed on a series of 24 hour composite samples collected as described in 1.B. below. In addition to use of a control, effluent concentrations for the tests must include the permitted limit, (i.e., 100% effluent) and at least four additional effluent concentrations. For a permit limit of 100% effluent, test concentrations shall be 20%, 40%, 60%, 80% and 100%. If the permit limit is less than 100% effluent and greater than or equal to 75% effluent, the test concentrations shall include the permitted limit, two concentrations below the limit that are based on a 0.5 dilution factor, and two concentrations above the limit (to include 100% and mid-point between the permit limit and 100%). If the permit limit is less than 75% effluent, test concentrations shall include the permit limit concentration, two concentrations below the limit based on a 0.5 dilution factor, and two concentrations above the limit based on a 0.5 dilution factor if possible, otherwise to include 100% and mid-point between the permit limit and 100%. Selection of different effluent concentrations must be approved by the Division prior to testing. Testing of the effluent shall be initiated within 36 hours of completing each 24 hour composite sample. Controls shall be tested concurrently with effluent testing using synthetic water. The analysis will be deemed reasonable and good only if the minimum control requirements are met, (i.e. For the Ceriodaphnia test: at least 80% survival of all control organisms and an average of 15 or more young per surviving female in the control solutions; and 60% of surviving control females must produce three broods. For the fathead minnow test: at least 80% survival in controls and the average dry weight per surviving organism in control chambers equals or exceeds 0.25 mg. Any test that does not meet the control acceptability criteria shall be repeated as soon as practicable within the monitoring period (i.e. monthly or quarterly). Noncompliance with the toxicity limit will be demonstrated if the IC₂₅ (inhibition concentration) for reproduction or growth is less than 100% effluent.

B. Tests shall be conducted on both species at the frequency specified in PART I of this permit.

A minimum of three 24 hour composite samples shall be collected at a frequency of one 24 hour composite every other day. For example, the first sample would be used for test initiation on day 1 and for test solution renewal on day 2. The second sample would be used for test solution renewal on days 3 and 4. The third sample would be used for test solution renewal on days 5, 6, and 7. Each 24 hour composite shall be collected using a refrigerated automatic sampler. Each 24 hour composite sample shall consist of not less than 48 discrete aliquots of effluent. Aliquots shall be of equal volume and time-proportional unless effluent flow is expected to vary by more than 10% from one hour to

1. Test Requirements - continued

another or by 50% over the 24 hour collection period (as predicted from historical trends, significant rainfall events, etc.). With anticipated effluent flow variation of greater than 10% per hour or 50% overall, the frequency, and volume of each aliquot shall be flow-proportional. The lapsed time from collection of the last aliquot of the composite and its first use for test initiation or for test solution renewal shall not exceed 36 hours.

Composite samples shall be refrigerated and maintained at not greater than 6°C during collection, storage, transport and until used in the test by the laboratory.

If after at least six consecutive toxicity tests, it can be determined that Ceriodaphnia dubia or the Fathead minnow is more sensitive and all tests have passed, a request for testing with only the most sensitive species can be submitted to the Division. Upon approval, that most sensitive species may be considered as representative and all subsequent compliance tests can be conducted using only that species unless directed at any time by the Division to change or revert to both.

2. Reporting Requirements

Results of all toxicity tests conducted with any species shall be reported according to the most recent format provided by the Division of Water. Notification of failed test shall be made to the Division's Water Quality Branch within five days of test completion. Test reports shall be submitted to the Division's Water Quality Branch within thirty days of completion.

3. Chronic Toxicity

If noncompliance with the toxicity limit occurs in an initial test, (i.e., the IC₂₅ for reproduction of water fleas or growth of minnows is less than 100% effluent), the permittee must repeat the test using a new set of three 24 hour composite samples. Sampling must be initiated within 15 days of completing the failed test. The second round of testing shall include both species unless approved for only the most sensitive species by the Division. Results of the second round of testing will be used to evaluate the possible need for a Toxicity Reduction Evaluation (TRE).

If the second round of testing also demonstrates noncompliance with the toxicity limit, the permittee will be required to perform accelerated testing as specified in the following paragraphs.

Complete four additional rounds of testing to evaluate the frequency and degree of toxicity within 60 days of completing the second round of failed testing. Results of the initial and second rounds of testing specified above, plus the four additional rounds of testing will be used in deciding if a TRE shall be required.

If results from any two of the six rounds of testing show a significant noncompliance with the chronic limit (i.e., ≥ 1.2 times the TUC), or results from any four of the six tests show chronic toxicity (as defined in 1.A), a TRE will be required.

3. Chronic Toxicity - continued

The permittee shall provide written notification to the Division of Water within five (5) days of completing accelerated testing stating that: (1) toxicity persisted and that a TRE will be initiated; or (2) that toxicity did not persist and the normal testing will resume.

Should toxicity prove not to be persistent during the accelerated testing period, but reoccur within 12 months of the initial failure at a level ≥ 1.2 times the TUC, then a TRE shall be required.

4. Toxicity Reduction Evaluation (TRE)

Having determined that a TRE is required, the permittee shall initiate &/or continue at least monthly testing with both species until such time as a specific TRE plan is approved by the Division. A TRE plan shall be developed by the permittee and submitted to the Division within thirty days of determining a TRE is required. The plan shall be developed in accordance with the most recent EPA and Division guidance. Questions regarding this process may be submitted to the Division's Water Quality Branch.

The TRE plan shall include Toxic Identification Evaluation (TIE) procedures, treatability studies, and evaluations of: chemical usage including changes in types, handling and suppliers; operational and process procedures; housekeeping and maintenance activities; and raw materials. The TRE plan will establish an implementation schedule to begin immediately upon approval by the Division, to have duration of at least six months, and not to exceed 24 months. The implementation schedule shall include quarterly progress reports being submitted to the Division's Water Quality Branch, due the last day of the month following each calendar quarter.

Upon completion of the TRE, the permittee shall submit a final report detailing the findings of the TRE and actions taken or to be taken to prevent the reoccurrence of toxicity. This final report shall include: the toxicant(s), if any are identified; treatment options; operational changes; and the proposed resolutions including an implementation schedule not to exceed 180 days.

Should the permittee determine the toxicant(s) and/or a workable treatment prior to the planned conclusion of the TRE, the permittee will notify the Division's Water Quality Branch within five days of making that determination and take appropriate actions to implement the solution within 180 days of that notification.

5. Test Methods

All test organisms, procedures and quality assurance criteria used shall be in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Fourth Edition), EPA-821-R-02-013, the most recent edition of this publication, or as approved in advance by the Division of Water.

Toxicity testing for compliance to KPDES discharge limits shall be performed by a laboratory approved by the Division of Water to conduct the required toxicity tests. Within each toxicity report to the Division of Water, the permittee

5. Test Methods - continued

must demonstrate successful performance of reference toxicant testing by the laboratory that conducts their effluent toxicity tests. Within 30 days prior to initiating an effluent toxicity test, a reference toxicant test must be completed for the method used; alternatively, the reference toxicant test may be run concurrent with the effluent toxicity test. In addition, for each test method, at least 5 acceptable reference toxicant tests must be completed by the laboratory prior to performing the effluent toxicity test. A control chart including the most recent reference toxicant test endpoints for the effluent test method (minimum of 5, up to 20 if available) shall be part of the report.

PART V
BEST MANAGEMENT PRACTICES

SECTION A. GENERAL CONDITIONS

1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle or discharge any pollutant listed as toxic under Section 307(a)(1) of the Clean Water Act, oil, as defined in Section 311(a)(1) of the Act, and any pollutant listed as hazardous under Section 311 of the Act and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant in a reportable quantity, or (2) an environmental emergency, as defined in KRS 224.01-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

2. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 40 CFR 122.44(k) as incorporated by 401 KAR 5:065, Section 2(4) pursuant to KRS 224.70-110, which prevents, or minimizes the potential for, the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

3. Implementation

The plan shall be developed to implement the requirements of Section B - Specific Conditions a minimum of one (1) year prior to commencement of operation.

4. General Requirements

The BMP plan shall:

- a. Be documented in narrative form, and shall include any necessary plot plans, drawings or maps.
- b. Establish specific objectives for the control of toxic and hazardous pollutants.
 - (1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.
 - (2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants", the plan should include a prediction of the direction, rate of flow and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

- c. Establish specific best management practices to meet the objectives identified under Paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."
- d. Include any special conditions established in part B of this section.
- e. Be reviewed by plant engineering staff and the plant manager.

5. Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document" and shall include the following baseline BMP's as a minimum.

- a. BMP Committee
- b. Reporting of BMP Incidents
- c. Risk Identification and Assessment
- d. Employee Training
- e. Inspections and Records
- f. Preventive Maintenance
- g. Good Housekeeping
- h. Materials Compatibility
- i. Security
- j. Materials Inventory

6. SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

7. Hazardous Waste Management

The permittee shall assure the proper management of solids and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

8. Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available to the Director within one (1) year after the effective date of the permit. Copies of the BMP plan shall be sent to:

Division of Water
Madisonville Regional Office
625 Hospital Drive
Madisonville, Kentucky 42431
ATTN: Supervisor

Energy & Environment Cabinet
Dept. for Environmental Protection
Division of Water/Surface Water Permits Branch
200 Fair Oaks Lane
Frankfort, Kentucky 40601

9. BMP Plan Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

10. Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants" then the specific objectives and requirements under Paragraphs b and c of Section 4, the permit and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit, the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

SECTION B. SPECIFIC CONDITIONS

Section 316(b) Requirements for New Cooling Water Intake Structures

§125.80 What are the purpose and scope of this subpart?

- (a) This subpart establishes requirements that apply to the location, design, construction, and capacity of cooling water intake structures at new facilities. The purpose of these requirements is to establish the best technology available for minimizing adverse environmental impact associated with the use of cooling water intake structures. These requirements are implemented through National Pollutant Discharge Elimination System (NPDES) permits issued under Section 402 of the Clean Water Act (CWA).
- (b) This subpart implements Section 316(b) of the CWA for new facilities. Section 316(b) of the CWA provides that any standard established pursuant to Sections 301 or 306 of the CWA and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.
- (c) New facilities that do not meet the threshold requirements regarding amount of water withdrawn or percentage of water withdrawn for cooling water purposes in §125.81(a) must meet requirements determined on a case-by-case, best professional judgment (BPJ) basis.
- (d) Nothing in this subpart shall be construed to preclude or deny the right of any State or political subdivision of a State or any interstate agency under Section 510 of the CWA to adopt or enforce any requirement with respect to control or abatement of pollution that is more stringent than those required by Federal law.

§125.81 Who is subject to this subpart?

- (a) This subpart applies to a new facility if it:
 - (1) Is a point source that uses or proposes to use a cooling water intake structure;
 - (2) Has at least one cooling water intake structure that uses at least 25 percent of the water it withdraws for cooling purposes as specified in paragraph (c) of this section; and
 - (3) Has a design intake flow greater than two (2) million gallons per day (MGD).
- (b) Use of a cooling water intake structure includes obtaining cooling water by any sort of contract or arrangement with an independent supplier (or multiple suppliers) of cooling water if the supplier or suppliers withdraw(s) water from waters of the United States. Use of cooling water does not include obtaining cooling water from a public water system or the use of treated effluent that otherwise would be discharged to a water of the U.S. This provision is intended to prevent circumvention of these requirements by creating arrangements to receive cooling water from an entity that is not itself a point source.

- (c) The threshold requirement that at least 25 percent of water withdrawn be used for cooling purposes must be measured on an average monthly basis. A new facility meets the 25 percent cooling water threshold if, based on the new facility's design, any monthly average over a year for the percentage of cooling water withdrawn is expected to equal or exceed 25 percent of the total water withdrawn.
- (d) This subpart does not apply to facilities that employ cooling water intake structures in the offshore and coastal subcategories of the oil and gas extraction point source category as defined under 40 CFR 435.10 and 40 CFR 435.40.

§125.82 When must I comply with this subpart?

You must comply with this subpart when an NPDES permit containing requirements consistent with this subpart is issued to you.

§125.83 What special definitions apply to this subpart?

The following special definitions apply to this subpart:

Annual mean flow means the average of daily flows over a calendar year. Historical data (up to 10 years) must be used where available.

Closed-cycle recirculating system means a system designed, using minimized makeup and blowdown flows, to withdraw water from a natural or other water source to support contact and/or noncontact cooling uses within a facility. The water is usually sent to a cooling canal or channel, lake, pond, or tower to allow waste heat to be dissipated to the atmosphere and then is returned to the system. (Some facilities divert the waste heat to other process operations.) New source water (make-up water) is added to the system to replenish losses that have occurred due to blowdown, drift, and evaporation.

Cooling water means water used for contact or noncontact cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility's premises. Cooling water that is used in a manufacturing process either before or after it is used for cooling is considered process water for the purposes of calculating the percentage of a new facility's intake flow that is used for cooling purposes in §125.81(c).

Cooling water intake structure means the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the U.S. The cooling water intake structure extends from the point at which water is withdrawn from the surface water source up to, and including, the intake pumps.

Design intake flow means the value assigned (during the facility's design) to the total volume of water withdrawn from a source water body over a specific time period.

Design intake velocity means the value assigned (during the design of a cooling water intake structure) to the average speed at which intake water passes through the open area of the intake screen (or other device) against which organisms might be impinged or through which they might be entrained.

Entrainment means the incorporation of all life stages of fish and shellfish with intake water flow entering and passing through a cooling water intake structure and into a cooling water system.

Estuary means a semi-enclosed body of water that has a free connection with open seas and within which the seawater is measurably diluted with fresh water derived from land drainage. The salinity of an estuary exceeds 0.5 parts per thousand (by mass) but is typically less than 30 parts per thousand (by mass).

Existing facility means any facility that is not a new facility.

Freshwater river or stream means a lotic (free-flowing) system that does not receive significant inflows of water from oceans or bays due to tidal action. For the purposes of this rule, a flow-through reservoir with a retention time of 7 days or less will be considered a freshwater river or stream.

Hydraulic zone of influence means that portion of the source waterbody hydraulically affected by the cooling water intake structure withdrawal of water.

Impingement means the entrapment of all life stages of fish and shellfish on the outer part of an intake structure or against a screening device during periods of intake water withdrawal.

Lake or reservoir means any inland body of open water with some minimum surface area free of rooted vegetation and with an average hydraulic retention time of more than 7 days. Lakes or reservoirs might be natural water bodies or impounded streams, usually fresh, surrounded by land or by land and a man-made retainer (e.g., a dam). Lakes or reservoirs might be fed by rivers, streams, springs, and/or local precipitation. Flow-through reservoirs with an average hydraulic retention time of 7 days or less should be considered a freshwater river or stream.

Maximize means to increase to the greatest amount, extent, or degree reasonably possible.

Minimize means to reduce to the smallest amount, extent, or degree reasonably possible.

Minimum ambient source water surface elevation means the elevation of the 7Q10 flow for freshwater streams or rivers; the conservation pool level for lakes or reservoirs; or the mean low tidal water level for estuaries or oceans. The 7Q10 flow is the lowest average 7 consecutive day low flow with an average frequency of one in 10 years determined hydrologically. The conservation pool is the minimum depth of water needed in a reservoir to ensure proper performance of the system relying upon the reservoir. The mean low tidal water level is the average height of the low water over at least 19 years.

Natural thermal stratification means the naturally-occurring division of a waterbody into horizontal layers of differing densities as a result of variations in temperature at different depths.

New facility means any building, structure, facility, or installation that meets the definition of a "new source" or "new discharger" in 40 CFR 122.2 and 122.29(b)(1), (2), and (4) and is a greenfield or stand-alone facility; commences construction after January 17, 2002; and uses either a newly constructed cooling water intake structure, or an existing cooling water intake structure whose design capacity is increased to accommodate the intake of additional cooling water. New facilities include only "greenfield" and "stand-alone" facilities. A greenfield facility is a facility that is constructed at a site at which no other source is located, or that totally replaces the process or production equipment at an existing facility (see 40 CFR 122.29(b)(1)(i) and (ii)). A stand-alone facility is a new, separate facility that is constructed on property where an existing facility is located and whose processes are substantially independent of the existing facility at the same site (see 40 CFR 122.29(b)(1)(iii)). New facility does not include new units that are added to a facility for purposes of the same general industrial operation (for example, a new peaking unit at an electrical generating station).

(1) Examples of "new facilities" include, but are not limited to: the following scenarios:

(i) A new facility is constructed on a site that has never been used for industrial or commercial activity. It has a new cooling water intake structure for its own use.

(ii) A facility is demolished and another facility is constructed in its place. The newly-constructed facility uses the original facility's cooling water intake structure, but modifies it to increase the design capacity to accommodate the intake of additional cooling water.

(iii) A facility is constructed on the same property as an existing facility, but is a separate and independent industrial operation. The cooling water intake structure used by the original facility is modified by constructing a new intake bay for the use of the newly constructed facility or is otherwise modified to increase the intake capacity for the new facility.

(2) Examples of facilities that would not be considered a "new facility" include, but are not limited to, the following scenarios:

(i) A facility in commercial or industrial operation is modified and either continues to use its original cooling water intake structure or uses a new or modified cooling water intake structure.

(ii) A facility has an existing intake structure. Another facility (a separate and independent industrial operation), is constructed on the same property and connects to the facility's cooling water intake structure behind the intake pumps, and the design capacity of the cooling water intake structure has not been increased. This facility would not be considered a "new facility" even if routine maintenance or repairs that do not increase the design capacity were performed on the intake structure.

Ocean means marine open coastal waters with a salinity greater than or equal to 30 parts per thousand (by mass).

Source water means the water body (waters of the U.S.) from which the cooling water is withdrawn.

Thermocline means the middle layer of a thermally stratified lake or reservoir. In this layer, there is a rapid decrease in temperatures.

Tidal excursion means the horizontal distance along the estuary or tidal river that a particle moves during one tidal cycle of ebb and flow.

Tidal river means the most seaward reach of a river or stream where the salinity is typically less than or equal to 0.5 parts per thousand (by mass) at a time of annual low flow and whose surface elevation responds to the effects of coastal lunar tides.

§125.84 As an owner or operator of a new facility, what must I do to comply with this subpart?

- (a) (1) The owner or operator of a new facility must comply with either:
- (i) Track I in paragraph (b) or (c) of this section; or
 - (ii) Track II in paragraph (d) of this section.
- (2) In addition to meeting the requirements in paragraph (b), (c), or (d) of this section, the owner or operator of a new facility may be required to comply with paragraph (e) of this section.
- (b) **Track I requirements for new facilities that withdraw equal to or greater than 10 MGD.** You must comply with all of the following requirements:
- (1) You must reduce your intake flow, at a minimum, to a level commensurate with that which can be attained by a closed-cycle recirculating cooling water system;
 - (2) You must design and construct each cooling water intake structure at your facility to a maximum through-screen design intake velocity of 0.5 ft/s;
 - (3) You must design and construct your cooling water intake structure such that the total design intake flow from all cooling water intake structures at your facility meets the following requirements:
 - (i) For cooling water intake structures located in a freshwater river or stream, the total design intake flow must be no greater than five (5) percent of the source water annual mean flow;
 - (ii) For cooling water intake structures located in a lake or reservoir, the total design intake flow must not disrupt the natural thermal stratification or turnover pattern (where present) of the source water except in cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish by any fishery management agency(ies);
 - (iii) For cooling water intake structures located in an estuary or tidal river, the total design intake flow over one tidal cycle of ebb and flow must be no greater than one (1) percent of the volume of the water column within the area centered about the opening of the intake with a diameter defined by the distance of one tidal excursion at the mean low water level;

- (4) You must select and implement design and construction technologies or operational measures for minimizing impingement mortality of fish and shellfish if:
 - (i) There are threatened or endangered or otherwise protected federal, state, or tribal species, or critical habitat for these species, within the hydraulic zone of influence of the cooling water intake structure; or
 - (ii) There are migratory and/or sport or commercial species of impingement concern to the Director or any fishery management agency(ies), which pass through the hydraulic zone of influence of the cooling water intake structure; or
 - (iii) It is determined by the Director or any fishery management agency(ies) that the proposed facility, after meeting the technology-based performance requirements in paragraphs (b)(1), (2), and (3) of this section, would still contribute unacceptable stress to the protected species, critical habitat of those species, or species of concern;
- (5) You must select and implement design and construction technologies or operational measures for minimizing entrainment of entrainable life stages of fish and shellfish if:
 - (i) There are threatened or endangered or otherwise protected federal, state, or tribal species, or critical habitat for these species, within the hydraulic zone of influence of the cooling water intake structure; or
 - (ii) There are or would be undesirable cumulative stressors affecting entrainable life stages of species of concern to the Director or any fishery management agency(ies), and it is determined by the Director or any fishery management agency(ies) that the proposed facility, after meeting the technology-based performance requirements in paragraphs (b)(1), (2), and (3) of this section, would contribute unacceptable stress to these species of concern;
- (6) You must submit the application information required in 40 CFR 122.21(r) and §125.86(b);
- (7) You must implement the monitoring requirements specified in §125.87;
- (8) You must implement the record-keeping requirements specified in §125.88.
- (c) **Track I requirements for new facilities that withdraw equal to or greater than 2 MGD and less than 10 MGD and that choose not to comply with paragraph (b) of this section.** You must comply with all the following requirements:
 - (1) You must design and construct each cooling water intake structure at your facility to a maximum through-screen design intake velocity of 0.5 ft/s;

- (2) You must design and construct your cooling water intake structure such that the total design intake flow from all cooling water intake structures at your facility meets the following requirements:
 - (i) For cooling water intake structures located in a freshwater river or stream, the total design intake flow must be no greater than five (5) percent of the source water annual mean flow;
 - (ii) For cooling water intake structures located in a lake or reservoir, the total design intake flow must not disrupt the natural thermal stratification or turnover pattern (where present) of the source water except in cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish by any fishery management agency(ies);
 - (iii) For cooling water intake structures located in an estuary or tidal river, the total design intake flow over one tidal cycle of ebb and flow must be no greater than one (1) percent of the volume of the water column within the area centered about the opening of the intake with a diameter defined by the distance of one tidal excursion at the mean low water level;
- (3) You must select and implement design and construction technologies or operational measures for minimizing impingement mortality of fish and shellfish if:
 - (i) There are threatened or endangered or otherwise protected federal, state, or tribal species, or critical habitat for these species, within the hydraulic zone of influence of the cooling water intake structure; or
 - (ii) There are migratory and/or sport or commercial species of impingement concern to the Director or any fishery management agency(ies), which pass through the hydraulic zone of influence of the cooling water intake structure; or
 - (iii) It is determined by the Director or any fishery management agency(ies) that the proposed facility, after meeting the technology-based performance requirements in paragraphs (c)(1) and (2) of this section, would still contribute unacceptable stress to the protected species, critical habitat of those species, or species of concern;
- (4) You must select and implement design and construction technologies or operational measures for minimizing entrainment of entrainable life stages of fish and shellfish;
- (5) You must submit the application information required in 40 CFR 122.21(r) and §125.86(b)(2), (3), and (4);
- (6) You must implement the monitoring requirements specified in §125.87;
- (7) You must implement the recordkeeping requirements specified in §125.88.

(d) **Track II.** The owner or operator of a new facility that chooses to comply under Track II must comply with the following requirements:

- (1) You must demonstrate to the Director that the technologies employed will reduce the level of adverse environmental impact from your cooling water intake structures to a comparable level to that which you would achieve were you to implement the requirements of paragraphs (b)(1) and (2) of this section.
 - (i) Except as specified in paragraph (d)(1)(ii) of this section, this demonstration must include a showing that the impacts to fish and shellfish, including important forage and predator species, within the watershed will be comparable to those which would result if you were to implement the requirements of paragraphs (b)(1) and (2) of this section. This showing may include consideration of impacts other than impingement mortality and entrainment, including measures that will result in increases in fish and shellfish, but it must demonstrate comparable performance for species that the Director, in consultation with national, state or tribal fishery management agencies with responsibility for fisheries potentially affected by your cooling water intake structure, identifies as species of concern.
 - (ii) In cases where air emissions and/or energy impacts that would result from meeting the requirements of paragraphs (b)(1) and (2) of this section would result in significant adverse impacts on local air quality, significant adverse impact on local water resources not addressed under paragraph (d)(1)(i) of this section, or significant adverse impact on local energy markets, you may request alternative requirements under §125.85.
- (2) You must design and construct your cooling water intake structure such that the total design intake flow from all cooling water intake structures at your facility meet the following requirements:
 - (i) For cooling water intake structures located in a freshwater river or stream, the total design intake flow must be no greater than five (5) percent of the source water annual mean flow;
 - (ii) For cooling water intake structures located in a lake or reservoir, the total design intake flow must not disrupt the natural thermal stratification or turnover pattern (where present) of the source water except in cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish by any fishery management agency(ies);
 - (iii) For cooling water intake structures located in an estuary or tidal river, the total design intake flow over one tidal cycle of ebb and flow must be no greater than one (1) percent of the volume of the water column within the area centered about the opening of the intake with a diameter defined by the distance of one tidal excursion at the mean low water level.

- (3) You must submit the application information required in 40 CFR 122.21(r) and §125.86(c).
- (4) You must implement the monitoring requirements specified in §125.87.
- (5) You must implement the record-keeping requirements specified in §125.88.
- (e) You must comply with any more stringent requirements relating to the location, design, construction, and capacity of a cooling water intake structure or monitoring requirements at a new facility that the Director deems are reasonably necessary to comply with any provision of state law, including compliance with applicable state water quality standards (including designated uses, criteria, and antidegradation requirements).

§125.85 May alternative requirements be authorized?

- (a) Any interested person may request that alternative requirements less stringent than those specified in §125.84(a) through (e) be imposed in the permit. The Director may establish alternative requirements less stringent than the requirements of §125.84(a) through (e) only if:
 - (1) There is an applicable requirement under §125.84(a) through (e);
 - (2) The Director determines that data specific to the facility indicate that compliance with the requirement at issue would result in compliance costs wholly out of proportion to those EPA considered in establishing the requirement at issue or would result in significant adverse impacts on local air quality, significant adverse impacts on local water resources not addressed under §125.84(d)(1)(i), or significant adverse impacts on local energy markets;
 - (3) The alternative requirement requested is no less stringent than justified by the wholly out of proportion cost or the significant adverse impacts on local air quality, significant adverse impacts on local water resources not addressed under §125.84(d)(1)(i), or significant adverse impacts on local energy markets; and
 - (4) The alternative requirement will ensure compliance with other applicable provisions of the Clean Water Act and any applicable requirement of state law.
- (b) The burden is on the person requesting the alternative requirement to demonstrate that alternative requirements should be authorized.

§125.86 As an owner or operator of a new facility, what must I collect and submit when I apply for my new or reissued NPDES permit?

- (a) (1) As an owner or operator of a new facility, you must submit to the Director a statement that you intend to comply with either:
 - (i) The Track I requirements for new facilities that withdraw equal to or greater than 10 MGD in §125.84(b);
 - (ii) The Track I requirements for new facilities that withdraw equal to or greater than 2 MGD and less than 10 MGD in §125.84(c);
 - (iii) The requirements for Track II in §125.84 (d).
- (2) You must also submit the application information required by 40 CFR 122.21(r) and the information required in either paragraph (b) of this section for Track I or paragraph (c) of this section for Track II when you apply for a new or reissued NPDES permit in accordance with 40 CFR 122.21.
- (b) **Track I application requirements.** To demonstrate compliance with Track I requirements in §125.84(b) or (c), you must collect and submit to the Director the information in paragraphs (b)(1) through (4) of this section.
 - (1) **Flow reduction information.** If you must comply with the flow reduction requirements in §125.84(b)(1), you must submit the following information to the Director to demonstrate that you have reduced your flow to a level commensurate with that which can be attained by a closed-cycle recirculating cooling water system:
 - (i) A narrative description of your system that has been designed to reduce your intake flow to a level commensurate with that which can be attained by a closed-cycle recirculating cooling water system and any engineering calculations, including documentation demonstrating that your make-up and blowdown flows have been minimized; and
 - (ii) If the flow reduction requirement is met entirely, or in part, by reusing or recycling water withdrawn for cooling purposes in subsequent industrial processes, you must provide documentation that the amount of cooling water that is not reused or recycled has been minimized.
 - (2) **Velocity information.** You must submit the following information to the Director to demonstrate that you are complying with the requirement to meet a maximum through-screen design intake velocity of no more than 0.5 ft/s at each cooling water intake structure as required in §125.84(b)(2) and (c)(1):
 - (i) A narrative description of the design, structure, equipment, and operation used to meet the velocity requirement; and
 - (ii) Design calculations showing that the velocity requirement will be met at minimum ambient source water surface elevations (based on best professional judgement using available hydrological data) and maximum head loss across the screens or other device.

- (3) **Source waterbody flow information.** You must submit to the Director the following information to demonstrate that your cooling water intake structure meets the flow requirements in §125.84(b)(3) and (c)(2):
- (i) If your cooling water intake structure is located in a freshwater river or stream, you must provide the annual mean flow and any supporting documentation and engineering calculations to show that your cooling water intake structure meets the flow requirements;
 - (ii) If your cooling water intake structure is located in an estuary or tidal river, you must provide the mean low water tidal excursion distance and any supporting documentation and engineering calculations to show that your cooling water intake structure facility meets the flow requirements; and
 - (iii) If your cooling water intake structure is located in a lake or reservoir, you must provide a narrative description of the water body thermal stratification, and any supporting documentation and engineering calculations to show that the natural thermal stratification and turnover pattern will not be disrupted by the total design intake flow. In cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish you must provide supporting documentation and include a written concurrence from any fisheries management agency(ies) with responsibility for fisheries potentially affected by your cooling water intake structure(s).
- (4) **Design and Construction Technology Plan.** To comply with §125.84(b)(4) and (5), or (c)(3) and (c)(4), you must submit to the Director the following information in a Design and Construction Technology Plan:
- (i) Information to demonstrate whether or not you meet the criteria in §125.84(b)(4) and (b)(5), or (c)(3) and (c)(4);
 - (ii) Delineation of the hydraulic zone of influence for your cooling water intake structure;
 - (iii) New facilities required to install design and construction technologies and/or operational measures must develop a plan explaining the technologies and measures you have selected based on information collected for the Source Water Biological Baseline Characterization required by 40 CFR 122.21(r)(3). (Examples of appropriate technologies include, but are not limited to, wedgewire screens, fine mesh screens, fish handling and return systems, barrier nets, aquatic filter barrier systems, etc. Examples of appropriate operational measures include, but are not limited to, seasonal shutdowns or reductions in flow, continuous operations of screens, etc.) The plan must contain the following information:

- (A) A narrative description of the design and operation of the design and construction technologies, including fish-handling and return systems, that you will use to maximize the survival of those species expected to be most susceptible to impingement. Provide species-specific information that demonstrates the efficacy of the technology;
 - (B) A narrative description of the design and operation of the design and construction technologies that you will use to minimize entrainment of those species expected to be the most susceptible to entrainment. Provide species-specific information that demonstrates the efficacy of the technology; and
 - (C) Design calculations, drawings, and estimates to support the descriptions provided in paragraphs (b)(4)(iii)(A) and (B) of this section.
- (c) **Application requirements for Track II.** If you have chosen to comply with the requirements of Track II in §125.84(d) you must collect and submit the following information:
- (1) **Source waterbody flow information.** You must submit to the Director the following information to demonstrate that your cooling water intake structure meets the source water body requirements in §125.84(d)(2):
 - (i) If your cooling water intake structure is located in a freshwater river or stream, you must provide the annual mean flow and any supporting documentation and engineering calculations to show that your cooling water intake structure meets the flow requirements;
 - (ii) If your cooling water intake structure is located in an estuary or tidal river, you must provide the mean low water tidal excursion distance and any supporting documentation and engineering calculations to show that your cooling water intake structure facility meets the flow requirements; and
 - (iii) If your cooling water intake structure is located in a lake or reservoir, you must provide a narrative description of the water body thermal stratification, and any supporting documentation and engineering calculations to show that the natural thermal stratification and thermal or turnover pattern will not be disrupted by the total design intake flow. In cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish you must provide supporting documentation and include a written concurrence from any fisheries management agency(ies) with responsibility for fisheries potentially affected by your cooling water intake structure(s).

- (2) **Track II Comprehensive Demonstration Study.** You must perform and submit the results of a Comprehensive Demonstration Study (Study). This information is required to characterize the source water baseline in the vicinity of the cooling water intake structure(s), characterize operation of the cooling water intake(s), and to confirm that the technology(ies) proposed and/or implemented at your cooling water intake structure reduce the impacts to fish and shellfish to levels comparable to those you would achieve were you to implement the requirements in §125.84(b)(1) and (2) of Track I. To meet the "comparable level" requirement, you must demonstrate that:
- (i) You have reduced both impingement mortality and entrainment of all life stages of fish and shellfish to 90 percent or greater of the reduction that would be achieved through §125.84(b)(1) and (2); or
 - (ii) If your demonstration includes consideration of impacts other than impingement mortality and entrainment, that the measures taken will maintain the fish and shellfish in the waterbody at a substantially similar level to that which would be achieved through §125.84(b)(1) and (2); and
 - (iii) You must develop and submit a plan to the Director containing a proposal for how information will be collected to support the study. The plan must include:
 - (A) A description of the proposed and/or implemented technology(ies) to be evaluated in the Study;
 - (B) A list and description of any historical studies characterizing the physical and biological conditions in the vicinity of the proposed or actual intakes and their relevancy to the proposed Study. If you propose to rely on existing source water body data, it must be no more than 5 years old, you must demonstrate that the existing data are sufficient to develop a scientifically valid estimate of potential impingement and entrainment impacts, and provide documentation showing that the data were collected using appropriate quality assurance/quality control procedures;
 - (C) Any public participation or consultation with Federal or State agencies undertaken in developing the plan; and
 - (D) A sampling plan for data that will be collected using actual field studies in the source water body. The sampling plan must document all methods and quality assurance procedures for sampling, and data analysis. The sampling and data analysis methods you propose must be appropriate for a quantitative survey and based on consideration of methods used in other studies performed in the source water body. The sampling plan must include a description of the study area (including the area of influence of the cooling water intake structure and at least 100 meters beyond); taxonomic identification of the sampled or evaluated biological assemblages (including all life stages of fish and shellfish); and sampling and data analysis methods; and
 - (iv) You must submit documentation of the results of the Study to the Director. Documentation of the results of the Study must include:

(A) **Source Water Biological Study.** The Source Water Biological Study must include:

- (1) A taxonomic identification and characterization of aquatic biological resources including: a summary of historical and contemporary aquatic biological resources; determination and description of the target populations of concern (those species of fish and shellfish and all life stages that are most susceptible to impingement and entrainment); and a description of the abundance and temporal/spatial characterization of the target populations based on the collection of multiple years of data to capture the seasonal and daily activities (e.g., spawning, feeding and water column migration) of all life stages of fish and shellfish found in the vicinity of the cooling water intake structure;
- (2) An identification of all threatened or endangered species that might be susceptible to impingement and entrainment by the proposed cooling water intake structure(s); and
- (3) A description of additional chemical, water quality, and other anthropogenic stresses on the source waterbody.

(B) **Evaluation of potential cooling water intake structure effects.** This evaluation will include:

- (1) Calculations of the reduction in impingement mortality and entrainment of all life stages of fish and shellfish that would need to be achieved by the technologies you have selected to implement to meet requirements under Track II. To do this, you must determine the reduction in impingement mortality and entrainment that would be achieved by implementing the requirements of §125.84(b)(1) and (2) of Track I at your site.
- (2) An engineering estimate of efficacy for the proposed and/or implemented technologies used to minimize impingement mortality and entrainment of all life stages of fish and shellfish and maximize survival of impinged life stages of fish and shellfish. You must demonstrate that the technologies reduce impingement mortality and entrainment of all life stages of fish and shellfish to a comparable level to that which you would achieve were you to implement the requirements in §125.84(b)(1) and (2) of Track I. The efficacy projection must include a site-specific evaluation of technology(ies) suitability for reducing impingement mortality and entrainment based on the results of the Source Water Biological Study in paragraph (c)(2)(iv)(A) of this section. Efficacy estimates may be determined based on case studies that have been conducted in the vicinity of the cooling water intake structure and/or site-specific technology prototype studies.

(C) **Evaluation of proposed restoration measures.** If you propose to use restoration measures to maintain the fish and shellfish as allowed in §125.84(d)(1)(i), you must provide the following information to the Director:

- (1) Information and data to show that you have coordinated with the appropriate fishery management agency(ies); and
- (2) A plan that provides a list of the measures you plan to implement and how you will demonstrate and continue to ensure that your restoration measures will maintain the fish and shellfish in the waterbody to a substantially similar level to that which would be achieved through §125.84(b)(1) and (2).

(D) **Verification monitoring plan.** You must include in the Study the following:

- (1) A plan to conduct, at a minimum, two years of monitoring to verify the full-scale performance of the proposed or implemented technologies, operational measures. The verification study must begin at the start of operations of the cooling water intake structure and continue for a sufficient period of time to demonstrate that the facility is reducing the level of impingement and entrainment to the level documented in paragraph (c)(2)(iv)(B) of this section. The plan must describe the frequency of monitoring and the parameters to be monitored. The Director will use the verification monitoring to confirm that you are meeting the level of impingement mortality and entrainment reduction required in §125.84(d), and that the operation of the technology has been optimized.
- (2) A plan to conduct monitoring to verify that the restoration measures will maintain the fish and shellfish in the waterbody to a substantially similar level as that which would be achieved through §125.84(b)(1) and (2).

§125.87 As an owner or operator of a new facility, must I perform monitoring?

As an owner or operator of a new facility, you will be required to perform monitoring to demonstrate your compliance with the requirements specified in §125.84.

- (a) **Biological monitoring.** You must monitor both impingement and entrainment of the commercial, recreational, and forage base fish and shellfish species identified in either the Source Water Baseline Biological Characterization data required by 40 CFR 122.21(r)(3) or the Comprehensive Demonstration Study required by §125.86(c)(2), depending on whether you chose to comply with Track I or Track II. The monitoring methods used must be consistent with those used for the Source Water Baseline Biological Characterization data required in 40 CFR 122.21(r)(3) or the Comprehensive Demonstration Study required by §125.86(c)(2). You must follow the monitoring frequencies identified below for at least two (2) years after the initial permit issuance. After that time, the Director may approve a request for less frequent sampling in the remaining years of the permit term and when the permit is reissued, if supporting data show that less frequent monitoring would still allow for the detection of any seasonal and daily variations in the species and numbers of individuals that are impinged or entrained.

- (1) **Impingement sampling.** You must collect samples to monitor impingement rates (simple enumeration) for each species over a 24-hour period and no less than once per month when the cooling water intake structure is in operation.
- (2) **Entrainment sampling.** You must collect samples to monitor entrainment rates (simple enumeration) for each species over a 24-hour period and no less than biweekly during the primary period of reproduction, larval recruitment, and peak abundance identified during the Source Water Baseline Biological Characterization required by 40 CFR 122.21(r)(3) or the Comprehensive Demonstration Study required in §125.86(c)(2). You must collect samples only when the cooling water intake structure is in operation.
- (b) **Velocity monitoring.** If your facility uses surface intake screen systems, you must monitor head loss across the screens and correlate the measured value with the design intake velocity. The head loss across the intake screen must be measured at the minimum ambient source water surface elevation (best professional judgment based on available hydrological data). The maximum head loss across the screen for each cooling water intake structure must be used to determine compliance with the velocity requirement in §125.84(b)(2) or (c)(1). If your facility uses devices other than surface intake screens, you must monitor velocity at the point of entry through the device. You must monitor head loss or velocity during initial facility startup, and thereafter, at the frequency specified in your NPDES permit, but no less than once per quarter.
- (c) **Visual or remote inspections.** You must either conduct visual inspections or employ remote monitoring devices during the period the cooling water intake structure is in operation. You must conduct visual inspections at least weekly to ensure that any design and construction technologies required in §125.84(b)(4) and (5), or (c)(3) and (4) are maintained and operated to ensure that they will continue to function as designed. Alternatively, you must inspect via remote monitoring devices to ensure that the impingement and entrainment technologies are functioning as designed.

§125.88 As an owner or operator of a new facility, must I keep records and report?

As an owner or operator of a new facility you are required to keep records and report information and data to the Director as follows:

- (a) You must keep records of all the data used to complete the permit application and show compliance with the requirements, any supplemental information developed under §125.86, and any compliance monitoring data submitted under §125.87, for a period of at least three (3) years from the date of permit issuance. The Director may require that these records be kept for a longer period.
- (b) You must provide the following to the Director in a yearly status report:
 - (1) Biological monitoring records for each cooling water intake structure as required by §125.87(a);
 - (2) Velocity and head loss monitoring records for each cooling water intake structure as required by §125.87(b); and
 - (3) Records of visual or remote inspections as required in §125.87(c).

REGULATORY REQUIREMENTS

EFFLUENT GUIDELINES

PART 423 - STEAM ELECTRIC POWER GENERATING POINT SOURCE CATEGORY

Section 423.15 - New Source Performance Standards (NSPS)

(a) The pH of all discharges, except once-through cooling water, shall be within the range of 6.0 to 9.0 standard units.

(b) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(c) The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table.

Low volume wastes sources means, taken collectively as if from one (1) source, wastewater from all sources except those for which specific limitations are otherwise established. Included but not limited to wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included.

Pollutant or Pollutant Characteristic	Maximum for Any 1 Day (mg/l)	Average of Daily Values for 30 Consecutive Days Shall Not Exceed (mg/l)
Total Suspended Solids	100.0	30.0
Oil & Grease	20.0	15.0

(d) The quantity of pollutants discharged in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in the following table.

Pollutant or Pollutant Characteristic	Maximum for Any 1 Day (mg/l)	Average of Daily Values for 30 Consecutive Days Shall Not Exceed (mg/l)
Total Suspended Solids	100.0	30.0
Oil & Grease	20.0	15.0
Copper, Total	1.0	1.0
Iron, Total	1.0	1.0

(f) The quantity of pollutants discharged in bottom ash transport waters shall not exceed the quantity determined by multiplying the flow of fly ash and bottom ash transport waters times the concentration listed in the following table.

Pollutant or Pollutant Characteristic	Maximum for Any 1 Day (mg/l)	Average of Daily Values for 30 Consecutive Days Shall Not Exceed (mg/l)
Total Suspended Solids	100.0	30.0
Oil & Grease	20.0	15.0

(g) There shall be no discharge of wastewater pollutants from fly ash transport water.

PART 423 - STEAM ELECTRIC POWER GENERATING POINT SOURCE CATEGORY

Section 423.15 - New Source Performance Standards (NSPS)

(h)(1) For any plant with a total rated electric generating capacity of 25 or more megawatts, the quantity of pollutants discharged in once-through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of the once-through cooling water from each discharge point times the concentration listed in the following table.

Pollutant or Pollutant Characteristic	Maximum Concentration for Any Time (mg/l)
Total Residual Chlorine	0.2

(h)(2) Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.

(j)(1) The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the concentration listed in the following table.

Pollutant or Pollutant Characteristic	Maximum Concentration (mg/l)	Average Concentration (mg/l)
Free Available Chlorine	0.5	0.2

Pollutant or Pollutant Characteristic	Maximum for Any 1 Day (mg/l)	Average of Daily Values for 30 Consecutive Days Shall Not Exceed (mg/l)
The 126 priority pollutants contained in chemicals added for cooling tower maintenance except:	No detectable amount	No detectable amount
Chromium, Total	0.2	0.2
Zinc, Total	1.0	1.0

(j)(2) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two (2) hours in any one day and not more than one (1) unit in any plant may discharge free available chlorine or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

(j)(3) At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the limitations for the 126 priority pollutants in paragraph (j)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136.

PART 423 - STEAM ELECTRIC POWER GENERATING POINT SOURCE CATEGORY

Section 423.15 - New Source Performance Standards (NSPS)

(k) Subject to the provisions of § 423.15(1), the quantity or quality of pollutants or pollutant parameters discharged in coal pile runoff shall not exceed the limitations specified below:

Pollutant or Pollutant Characteristic	Maximum Concentration for Any Time (mg/l)
Total Suspended Solids	50

(l) Any untreated overflow from facilities designed, constructed, and operated to treat the coal pile runoff which results from a 10 year, 24 hour rainfall event shall not be subject to the limitations of § 423.15(k).

(m) At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraphs (c) through (j) of this section. Concentration limits shall be based on the concentrations specified in this section.

(n) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (a) through (m) of this section attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

WATER QUALITY STANDARDS and BEST PROFESSIONAL JUDGMENT

401 KAR 10:031, SECTION 4 - WARM WATER AQUATIC HABITAT CRITERIA

Pollutant or Pollutant Characteristic	Acute Criteria (mg/l)	Chronic Criteria (mg/l)
Total Residual Chlorine	0.019	0.011
pH (Standard Units)	Within the range of 6.0 to 9.0 at all times	

CHEMICAL OXYGEN DEMAND (COD)

The procedure for determining if the COD level in the wastestream will have a reasonable potential to cause a violation of the Water Quality Standards, and therefore, require limitations, involves using a mass balance equation to determine the in-stream COD concentration after mixing:

$$(7Q_{10} \cdot C_r) + (Q_e \cdot C_e) = (7Q_{10} + Q_e) \cdot (C_m)$$

Where: $7Q_{10}$ is the $7Q_{10}$ of the receiving stream
 Q_e is the effluent flowrate
 C_r is the upstream concentration, assumed 10 mg/l
 C_e is the effluent concentration
 C_m is the concentration after mixing

For Outfall 001 equation produces the following:

$$[(473 \text{ cfs})(0.64632 \text{ MGD/cfs}) \cdot (10 \text{ mg/l})] + (1.382 \text{ MGD}) \cdot (240 \text{ mg/l}) = [(473 \text{ cfs})(0.64632 \text{ MGD/cfs}) + (1.382 \text{ MGD})] \cdot (C_m)$$

Solving for the concentration after mixing yields: $C_m = 11.0 \text{ mg/l}$

Based on the fact that the wastestream causes only a 1 mg/l rise in the receiving stream and that a wastestream concentration less than 250 mg/l is considered weak (Metcalf & Eddy, Inc.; Wastewater Engineering Treatment/Disposal/Reuse), it is the Best Professional Jugement of the Division of Water that the COD component of the wastestream does not have a reasonable potential to cause a violation of the Water Quality Standards.

40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3) - BEST PROFESSIONAL JUDGMENT - for concentrations in Cooling Tower Blowdown

Pollutant or Pollutant Characteristic	Maximum Concentration (mg/l)	Average Concentration (mg/l)
Total Suspended Solids	50	30
Oil & Grease	5	5

LIMITS CALCULATIONS - Outfall 001

TECHNOLOGY BASED LIMITATIONS

The development of flow-weighted limitations is required to insure compliance with the effluent guidelines. To calculate the limits for each parameter, the following formulas are used.

$$\text{Monthly Average} = \frac{\sum Q_{30} \times F_{30}}{\sum Q_{30}}$$

$$\text{Daily Maximum} = \frac{\sum Q_1 \times F_1}{\sum Q_1}$$

Where: Q_{30} is the 30-day or average flow of each component wastestream

Q_1 is the maximum flow of each component wastestream

F_{30} is the average factor applied to each component wastestream

F_1 is the maximum factor applied to each component wastestream

Limits Calculations										
			Total Suspended Solids				Oil & Grease			
Source	Flow (gpm)		Factor (mg/l)		Contribution		Factor (mg/l)		Contribution	
	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum	Average
Low Volume Waste	84	84	100	30	8,400	2,520	20	15	1,680	1,260
Cooling Tower Blowdown	1,224	1,224	50	30	61,200	36,720	5	5	6,120	6,120
Sanitary	3	3	45	30	135	90	0	0	0	0
Total (lbs/day)	1,311	1,311			69,735	39,330			7,800	7,380
Limit (mg/l)					53.2	30.0			5.9	5.6

FLOW CALCULATIONS - Outfalls 004 & 005

To calculate the flows for precipitation-based discharges, the following formula will be used.

$$Q = CIAF$$

Where Q is flow (in MGD)	1-Day Flow	30-Day Flow
C is the coefficient of runoff		
I is the rainfall (in inches)	10-yr, 24-hr event	Annual Ave. Rainfall
A is the area (in acres)		
F is the units conversion factor	0.027152400	0.000074390

Due to the treatment plant being a co-treatment system, the development of flow-weighted limitations is required to insure compliance with the effluent guidelines. To calculate the limits for each parameter, the following formulas are used.

Landfill Flow Calculations										
Source	Coefficient of Runoff	Surface Area (acres)	10-yr 24-hr Rainfall (inches)	Average Annual Rainfall (inches)	Maximum Conversion Factor	Average Conversion Factor	Maximum Flow (gpm)	Average Flow (gpm)	Maximum Flow (MGD)	Average Flow (MGD)
Landfill north side (Outfall 004)	0.30	10.67	4.70	45.00	18.71	1.23	281	177	0.405	0.255
Landfill south side (Outfall 005)	0.30	12.52	4.70	45.00	18.71	1.23	330	208	0.476	0.299

APPENDIX A TO PART 403 – 126 PRIORITY POLLUTANTS		
001 Acenaphthene	044 Methylene chloride (dichloromethane)	088 Vinyl chloride (chloroethylene)
002 Acrolein	045 Methyl chloride (dichloromethane)	089 Aldrin
003 Acrylonitrile	046 Methyl bromide (bromomethane)	090 Dieldrin
004 Benzene	047 Bromoform (tribromomethane)	091 Chlordane (technical mixture and metabolites)
005 Benzidine	048 Dichlorobromomethane	092 4,4-DDT
006 Carbon tetrachloride (tetrachloromethane)	051 Chlorodibromomethane	093 4,4-DDE (p,p-DDX)
007 Chlorobenzene	052 Hexachlorobutadiene	094 4,4-DDD (p,p-TDE)
008 1,2,4-trichlorobenzene	053 Hexachloromyclopentadiene	095 Alpha-endosulfan
009 Hexachlorobenzene	054 Isophorone	096 Beta-endosulfan
010 1,2-dichloroethane	055 Naphthalene	097 Endosulfan sulfate
011 1,1,1-trichloroethane	056 Nitrobenzene	098 Endrin
012 Hexachloroethane	057 2-nitrophenol	099 Endrin aldehyde
013 1,1-dichloroethane	058 4-nitrophenol	100 Heptachlor
014 1,1,2-trichloroethane	059 2,4-dinitrophenol	101 Heptachlor epoxide (BHC-hexachlorocyclohexane)
015 1,1,2,2-tetrachloroethane	060 4,6-dinitro-o-cresol	102 Alpha-BHC
016 Chloroethane	061 N-nitrosodimethylamine	103 Beta-BHC
018 Bis(2-chloroethyl) ether	062 N-nitrosodiphenylamine	104 Gamma-BHC (lindane)
019 2-chloroethyl vinyl ether (mixed)	063 N-nitrosodi-n-propylamin	105 Delta-BHC (PCB-polychlorinated biphenyls)
020 2-chloronaphthalene	064 Pentachlorophenol	106 PCB-1242 (Arochlor 1242)
021 2,4, 6-trichlorophenol	065 Phenol	107 PCB-1254 (Arochlor 1254)
022 Parachlorometa cresol	066 Bis(2-ethylhexyl) phthalate	108 PCB-1221 (Arochlor 1221)
023 Chloroform (trichloromethane)	067 Butyl benzyl phthalate	109 PCB-1232 (Arochlor 1232)
024 2-chlorophenol	068 Di-N-Butyl Phthalate	110 PCB-1248 (Arochlor 1248)
025 1,2-dichlorobenzene	069 Di-n-octyl phthalate	111 PCB-1260 (Arochlor 1260)
026 1,3-dichlorobenzene	070 Diethyl Phthalate	112 PCB-1016 (Arochlor 1016)
027 1,4-dichlorobenzene	071 Dimethyl phthalate	113 Toxaphene
028 3,3-dichlorobenzidine	072 1,2-benzanthracene (benzo(a)anthracene)	114 Antimony
029 1,1-dichloroethylene	073 Benzo(a)pyrene (3,4-benzo-pyrene)	115 Arsenic
030 1,2-trans-dichloroethylene	074 3,4-Benzofluoranthene (benzo(b)fluoranthene)	116 Asbestos
031 2,4-dichlorophenol	075 1,12-benzofluoranthene (benzo(b)fluoranthene)	117 Beryllium
032 1,2-dichloropropane	076 Chrysene	118 Cadmium
033 1,2-dichloropropylene (1,3-dichloropropene)	077 Acenaphthylene	119 Chromium
034 2,4-dimethylphenol	078 Anthracene	120 Copper
035 2,4-dinitrotoluene	079 1,12-benzoperylene (benzo(ghi) perylene)	121 Cyanide, Total
036 2,6-dinitrotoluene	080 Fluorene	122 Lead
037 1,2-diphenylhydrazine	081 Phenanthrene	123 Mercury
038 Ethylbenzene	082 1,2,5,6-dibenzanthracene (dibenzo(,h) anthracene)	124 Nickel
039 Fluoranthene	083 Indeno (,1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)	125 Selenium
040 4-chlorophenyl phenyl ether	084 Pyrene	126 Silver
041 4-bromophenyl phenyl ether	085 Tetrachloroethylene	127 Thallium
042 Bis(2-chloroisopropyl) ether	086 Toluene	126 Silver
043 Bis(2-chloroethoxy) methane	087 Trichloroethylene	128 Zinc
		129 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

Permit Writer	Sara Beard	
Date Entered	5/25/2010	
Facility Name	Cash Creek	
KPDES Number	Generating Station	
Outfall Number	KY0107000	
Case	001	
Status:	First Issuance	
Is this an existing facility – Enter “E”		
Is this an existing facility with an increase in pollutant load – Enter “I”		
Is this a new facility – Enter “N”		
Is this a regional facility with an approved up-to-date 201 plan – Enter “R”		
Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”	A	
Receiving Water Name	Green River	
Discharge Mile Point	32.3	
Public Water Supply Name	Henderson Water	
Intake Water Name	Utility	
Intake Mile Point	Ohio River	
Total Effluent Flow (Q _T)	799.6	
Receiving Water 7Q10 (Q _{RW7Q10})	1.763	MGD
Receiving Water Harmonic Mean (Q _{RWHM})	473	cfs
Receiving Water pH	3765	cfs
Receiving Water Temperature	7.5	SU
Intake Water 7Q10 (Q _{IW7Q10})	20.00	°C
Intake Water Harmonic Mean (Q _{IWHM})	12900	cfs
Effluent Hardness	60900	cfs
Receiving Water Hardness	100	(as mg/l CaCO ₃)
Zone of Initial Dilution (ZID)	100	(as mg/l CaCO ₃)
Mixing Zone (MZ)	1	
Acute to Chronic Ratio (ACR)	0	
Impaired	0.1	
Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014	No	
	Yes	

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

Calculation Methodology

Definitions

Acute to Chronic Ratio	ACR	Total Effluent Flow	Q_T
Aquatic Life Acute Criteria	C_A	Receiving Water 7Q10	Q_{RW7Q10}
Aquatic Life Chronic Criteria	C_C	Receiving Water Harmonic Mean	Q_{RWHM}
Human Health Criteria - Fish Only	C_{HHFO}	Intake Water 7Q10	Q_{IW7Q10}
Human Health Criteria - Fish & Water	C_{HHFW}	Intake Water Harmonic Mean	Q_{IWHM}
End of Pipe Effluent Limit	C_T	Zone of Initial Dilution	ZID
Instream Background Concentration	C_U	Mixing Zone	MZ
Toxicity Units - Acute	TU_a	Toxicity Units - Chronic	TU_c
Effluent Hardness	H_T	Receiving Water Hardness	H_{RW}

Aquatic Life - Chemical Specific

Acute

NO ZID given $C_T = C_A$
 ZID given $C_T = (C_A - C_U) \times (ZID)$

Chronic Mixing Zone / Complete Mix

$$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\} / Q_T$$

Human Health - Chemical Specific

Fish Only: Mixing Zone / Complete Mix

Carcinogen / Non-Carcinogen $C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - C_U(MZ)(Q_{RWHM})\} / Q_T$

Fish & Water Only: Mixing Zone / Applicable at point of withdrawal

Carcinogen $C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - C_U(Q_{IWHM})\} / Q_T$
 Non-Carcinogen $C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - C_U(Q_{IW7Q10})\} / Q_T$

Aquatic Life - Whole Effluent Toxicity

Acute (Units TU_a)

NO ZID given $C_T = C_A$
 ZID given $C_T = (C_A - C_U) \times (ZID)$

Chronic Mixing Zone / Complete Mix (Units TU_c)

$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\} / Q_T$
 Conversion of TU_c to TU_a : $TU_c \times ACR = TU_a$

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

Metal Aquatic Criteria

Pollutant

Total Recoverable Cadmium
 Chromium III
 Total Recoverable Copper
 Total Recoverable Lead
 Total Recoverable Nickel
 Total Recoverable Silver
 Total Recoverable Zinc

Acute Criteria

$e^{(1.0166 (\ln \text{Hardness}) - 3.924)}$
 $e^{(0.8190 (\ln \text{Hardness}) + 3.7256)}$
 $e^{(0.9422 (\ln \text{Hardness}) - 1.700)}$
 $e^{(1.273 (\ln \text{Hardness}) - 1.460)}$
 $e^{(0.8460 (\ln \text{Hardness}) + 2.255)}$
 $e^{(1.72 (\ln \text{Hardness}) - 6.59)}$
 $e^{(0.8473 (\ln \text{Hardness}) + 0.884)}$

Chronic Criteria

$e^{(0.7409 (\ln \text{Hardness}) - 4.719)}$
 $e^{(0.8190 (\ln \text{Hardness}) + 0.6848)}$
 $e^{(0.8545 (\ln \text{Hardness}) - 1.702)}$
 $e^{(1.273 (\ln \text{Hardness}) - 4.705)}$
 $e^{(0.8460 (\ln \text{Hardness}) + 0.0584)}$
 $e^{(0.8473 (\ln \text{Hardness}) + 0.884)}$

Hardness (as mg/l CaCO₃)

Zone Initial Dilution (ZID)
 Mixing Zone

$$H_{RW} + [H_T + H_{RW}]/ZID$$

$$[(Q_{RW7Q10})(MZ)(H_{RW}) + (Q_T)(H_T)]/[(Q_{RW7Q10})(MZ) + (Q_T)]$$

Total Ammonia Criteria

Chronic - applies state wide - unionized criteria of 0.05 mg/l
Acute - applies to the Ohio River (ORSANCO Criteria)

$$\frac{[0.05 * (1 + 10^{(pKa - pH)})]^{1.2}}{[0.411 / (1 + 10^{(7.204 - pH)})] + [58.4 / (1 + 10^{(pH - 7.204)})]}$$

$pKa = (0.0902 + (2730 / (273.1 + T)))$ T = Temperature °C

Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concern assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

Antidegradation

If a new facility or an existing facility that will have a pollutant load increase wishes to discharge to a receiving stream that is not impaired, the permittee must successfully complete and alternatives analysis and socioeconomic demonstration.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
Chloride	16887006	120.000000	120.000000	600.000000	1,200.000000	20.00%	10.00%	Application	1	None	None	Chronic	Acute
Total Residual Chlorine		0.000000	0.000000	0.011000	0.019000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Color		0.000000	0.000000	354.587195	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Fluoride		0.860000	0.860000	9,455.658537	NA	0.01%	0.00%	Application	1	None	None	HH DWS	NA
Nitrate-Nitrite (as N)	14797558	10.000000	10.000000	47,278.292683	NA	0.02%	0.00%	Application	1	None	None	HH DWS	NA
Total Alpha		0.000000	0.000000	NA	15.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Beta		0.000000	0.000000	NA	50.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Radium		0.000000	0.000000	NA	5.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Sulfate (as SO4)		1,100.000000	1,100.000000	1,181,957.317073	NA	0.09%	0.00%	Application	1	None	None	HH DWS	NA
Surfactants		0.000000	0.000000	2,363.914634	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Barium	7440393	1.200000	1.200000	4,727.829268	NA	0.03%	0.00%	Application	1	None	None	HH DWS	NA
Total Recoverable Iron	7439896	0.000000	0.000000	1.000000	4.000000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Antimony	7440360	0.000000	0.000000	0.640000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Arsenic	7440382	0.061000	0.061000	0.150000	0.340000	40.67%	17.94%	Application	1	None	None	Chronic	Acute
Total Recoverable Beryllium	7440417	0.000000	0.000000	18.911317	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Cadmium	7440439	0.031000	0.031000	0.000271	0.002133	11455.06%	1453.23%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Chromium	7440439	0.180000	0.180000	472.782927	NA	0.04%	0.00%	Application	1	None	None	HH DWS	NA
Total Recoverable Copper	7440508	0.180000	0.180000	0.009329	0.013999	1929.49%	1285.80%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Lead	7439921	0.330000	0.330000	0.003182	0.081645	10372.17%	404.19%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Mercury	7439976	0.003100	0.003100	0.000051	0.001700	6078.43%	182.35%	Application	1	Monitoring	Monitoring	HH Fish	Acute
Total Recoverable Nickel	7440020	0.610000	0.610000	0.052163	0.469174	1169.41%	130.02%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Selenium	7782492	0.033000	0.033000	0.005000	0.020000	660.00%	165.00%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Silver	7440224	0.180000	0.180000	NA	0.003784	0.00%	4756.34%	Application	1	None	Monitoring	NA	Acute
Total Recoverable Thallium	7440280	0.000000	0.000000	0.006300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Zinc	7440666	0.180000	0.180000	0.119816	0.119816	150.23%	150.23%	Application	1	Monitoring	Monitoring	Chronic	Acute
Free Cyanide	57125	0.061000	0.061000	0.005200	0.022000	1173.08%	277.27%	Application	1	Monitoring	Monitoring	Chronic	Acute
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrolein	107028	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrylonitrile	107131	0.000000	0.000000	0.000250	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzene	71432	0.000000	0.000000	0.051000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bromoform	75252	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Carbon Tetrachloride	56235	0.000000	0.000000	0.001600	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorobenzene	108907	0.000000	0.000000	21.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorodibromomethane	124481	0.000000	0.000000	0.013000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloroform	67663	0.000000	0.000000	0.470000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dichlorobromomethane	75274	0.000000	0.000000	0.017000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloroethane	107062	0.000000	0.000000	0.037000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1-Dichloroethylene	75354	0.000000	0.000000	0.003200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloropropane	78875	0.000000	0.000000	0.015000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichloropropene	542756	0.000000	0.000000	1.700000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ethylbenzene	100414	0.000000	0.000000	29.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methyl Bromide	74839	0.000000	0.000000	1.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methylene Chloride	75092	0.000000	0.000000	0.590000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,2,2-Tetrachloroethane	79345	0.000000	0.000000	0.004000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Tetrachloroethylene	127184	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
Toluene	108883	0.000000	0.000000	200.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Trans-Dichloroethylene	156605	0.000000	0.000000	140.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,1-Trichloroethane	71556	0.000000	0.000000	945.565854	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
1,1,2-Trichloroethane	79005	0.000000	0.000000	0.016000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Trichloroethylene	79016	0.000000	0.000000	0.030000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Vinyl Chloride	75014	0.000000	0.000000	0.530000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chlorophenol	95578	0.000000	0.000000	0.150000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dichlorophenol	120832	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dimethylphenol	105679	0.000000	0.000000	0.850000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrophenol	51285	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pentachlorophenol	87865	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phenol	108952	0.061000	0.061000	1,700.000000	NA	0.00%	0.00%	Application	1	None	None	HH Fish	NA
2,4,6-Trichlorophenol	88062	0.000000	0.000000	0.002400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acenaphthene	83329	0.000000	0.000000	0.990000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Anthracene	120127	0.000000	0.000000	40.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzidine	92875	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)anthracene	56553	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)pyrene	50328	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(k)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroisopropyl)ether	108601	0.000000	0.000000	65.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-ethylhexyl)phthalate	117817	0.000000	0.000000	0.002200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Butylbenzyl phthalate	85687	0.000000	0.000000	1.900000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chloronaphthalene	91587	0.000000	0.000000	1.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chrysene	218019	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dibenzo(a,h)anthracene	53703	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichlorobenzene	95501	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichlorobenzene	541731	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,4-Dichlorobenzene	106467	0.000000	0.000000	2.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
3,3-Dichlorobenzidine	91941	0.000000	0.000000	0.000028	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Diethyl phthalate	84662	0.000000	0.000000	44.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dimethyl phthalate	131113	0.000000	0.000000	1,100.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Di-n-butyl phthalate	84742	0.000000	0.000000	4.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrotoluene	121142	0.000000	0.000000	0.003400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Diphenylhydrazine	122667	0.000000	0.000000	0.000200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluoranthene	206440	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluorene	86737	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobenzene	118741	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobutadiene	87683	0.000000	0.000000	0.018000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorocyclopentadiene	77474	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachloroethane	67721	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ideno(1,2,3-cd)pyrene	193395	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Isophorone	78591	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Nitrobenzene	98953	0.000000	0.000000	0.690000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodimethylamine	62759	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodi-n-Propylamine	621647	0.000000	0.000000	0.000510	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
N-Nitrosodiphenylamine	86306	0.000000	0.000000	0.006000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pyrene	129000	0.000000	0.000000	4.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2,4-Trichlorobenzene	120821	0.000000	0.000000	0.940000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Aldrin	309002	0.000000	0.000000	0.000000	0.003000	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
alpha-BHC	319846	0.000000	0.000000	0.000005	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Beta-BHC	319857	0.000000	0.000000	0.000017	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
gamma-BHC (Lindane)	58899	0.000000	0.000000	0.000063	0.000950	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Chlordane	57749	0.000000	0.000000	0.000001	0.002400	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDT	50293	0.000000	0.000000	0.000000	0.001100	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDE	72559	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
4,4'-DDD	72548	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dieldrin	60571	0.000000	0.000000	0.000000	0.000240	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Alpha-Endosulfan	959988	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Beta-Endosulfan	33213659	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endosulfan sulfate	1031078	0.000000	0.000000	0.089000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Endrin	72208	0.000000	0.000000	0.000036	0.000086	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endrin aldehyde	7421934	0.000000	0.000000	0.000300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Heptachlor	76448	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Heptachlor epoxide	1024573	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Polychlorinated Biphenyls (PCBs)		0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toxaphene	8001352	0.000000	0.000000	0.000000	0.000730	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
1,2,4,5-Tetrachlorobenzene	95943	0.000000	0.000000	0.001100	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-methyl-4,6-dinitrophenol	534521	0.000000	0.000000	0.280000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-D	94757	0.000000	0.000000	1,562.122184	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-TP (Silvex)	93721	0.000000	0.000000	47.278293	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-trichlorophenol	95954	0.000000	0.000000	3.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Asbestos	1332214	0.000000	0.000000	156,212,218.377765	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Benzo(b)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroethyl)ether	111444	0.000000	0.000000	0.000530	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(chloromethyl)ether	542881	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloropyrifos	2921882	0.000000	0.000000	0.000041	0.000083	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (III)	16065831	0.000000	0.000000	0.086180	1.803049	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (VI)	18540299	0.000000	0.000000	0.011000	0.016000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Demeton	8065483	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Dinitrophenols	25550587	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Guthion	86500	0.000000	0.000000	0.000010	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Hexachlorocyclo-hexane-Technical	319868	0.000000	0.000000	0.000041	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hydrogen Sulfide, Undissociated	7783064	0.000000	0.000000	0.002000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Malathion	121755	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Methoxychlor	72435	0.000000	0.000000	0.000030	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Mirex	2385855	0.000000	0.000000	0.000001	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Nitrosamines, Other		0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodibutylamine	924163	0.000000	0.000000	0.000220	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiethylamine	55185	0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosopyrrolidine	930552	0.000000	0.000000	0.034000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

<u>Parameter</u>	<u>CAS Number</u>	<u>Reported Discharge (mg/l)</u>		<u>Calculated Effluent Limitations (mg/l)</u>		<u>Reasonable Potential</u>		<u>Data Source</u>	<u>No. of Samples</u>	<u>Effluent Requirement</u>		<u>Justification</u>	
		<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>			<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>
Parathion	56382	0.000000	0.000000	0.000013	0.000065	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Pentachlorobenzene	608935	0.000000	0.000000	0.001500	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phthalate esters		0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Total Dissolved Solids		0.000000	0.000000	3,545,871.951220	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Tritium		0.000000	0.000000	NA	20,000.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Strontium-90		0.000000	0.000000	NA	8.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Uranium		0.000000	0.000000	NA	0.030000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Ammonia		0.000000	0.000000	3.360911	19.890204	0.00%	0.00%	No Data	0	None	None	Chronic	Acute

Hardness
 Metal limitations are developed using the mixed hardness of the effluent and receiving waters

Chronic
 100.00

Acute
 100.00

Toxicity

<u>Type of Test</u>	<u>Maximum</u>	<u>Units</u>	<u>Justification</u>	<u>Percent Effluent</u>
Chronic	1.00	TUc	Chronic	100.00%

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

Permit Writer	Sara Beard	
Date Entered	5/25/2010	
Facility Name	Cash Creek	
KPDES Number	Generating Station	
Outfall Number	KY0107000	
Case	002	
Status:	First Issuance	
Is this an existing facility – Enter “E”		
Is this an existing facility with an increase in pollutant load – Enter “I”		
Is this a new facility – Enter “N”		
Is this a regional facility with an approved up-to-date 201 plan – Enter “R”		
Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”	A	
Receiving Water Name	Green River (via	
Discharge Mile Point	Outfall 001)	
Public Water Supply Name	32.3	
Intake Water Name	Henderson Water	
Intake Mile Point	Utility	
Total Effluent Flow (Q_T)	Ohio River	
Receiving Water 7Q10 (Q_{RW7Q10})	799.6	
Receiving Water Harmonic Mean (Q_{RWHM})	0.998	MGD
Receiving Water pH	163	cfs
Receiving Water Temperature	10599	cfs
Intake Water 7Q10 (Q_{IW7Q10})	7.5	SU
Intake Water Harmonic Mean (Q_{IWHM})	20.00	°C
Effluent Hardness	12900	cfs
Receiving Water Hardness	60900	cfs
Zone of Initial Dilution (ZID)	100	(as mg/l CaCO3)
Mixing Zone (MZ)	100	(as mg/l CaCO3)
Acute to Chronic Ratio (ACR)	1	
Impaired	0	
Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014	0.1	
	No	
	Yes	

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
Chloride	16887006	140.000000	140.000000	600.000000	1,200.000000	23.33%	11.67%	Application	1	None	None	Chronic	Acute
Total Residual Chlorine		0.000000	0.000000	0.011000	0.019000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Color		0.000000	0.000000	626.332515	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Fluoride		1.000000	1.000000	16,702.200401	NA	0.01%	0.00%	Application	1	None	None	HH DWS	NA
Nitrate-Nitrite (as N)	14797558	12.000000	12.000000	83,511.002004	NA	0.01%	0.00%	Application	1	None	None	HH DWS	NA
Total Alpha		0.000000	0.000000	NA	15.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Beta		0.000000	0.000000	NA	50.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Radium		0.000000	0.000000	NA	5.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Sulfate (as SO4)		1,500.000000	1,500.000000	2,087,775.050100	NA	0.07%	0.00%	Application	1	None	None	HH DWS	NA
Surfactants		0.000000	0.000000	4,175.550100	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Barium	7440393	1.500000	1.500000	8,351.100200	NA	0.02%	0.00%	Application	1	None	None	HH DWS	NA
Total Recoverable Iron	7439896	0.000000	0.000000	1.000000	4.000000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Antimony	7440360	0.000000	0.000000	0.640000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Arsenic	7440382	0.071000	0.071000	0.150000	0.340000	47.33%	20.88%	Application	1	None	None	Chronic	Acute
Total Recoverable Beryllium	7440417	0.000000	0.000000	33.404401	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Cadmium	7440439	0.000000	0.000000	0.000271	0.002133	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Chromium	7440439	0.220000	0.220000	835.110020	NA	0.03%	0.00%	Application	1	None	None	HH DWS	NA
Total Recoverable Copper	7440508	0.220000	0.220000	0.009329	0.013999	2358.26%	1571.53%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Lead	7439921	0.390000	0.390000	0.003182	0.081645	12258.01%	477.68%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Mercury	7439976	0.003600	0.003600	0.000051	0.001700	7058.82%	211.76%	Application	1	Monitoring	Monitoring	HH Fish	Acute
Total Recoverable Nickel	7440020	0.710000	0.710000	0.052163	0.469174	1361.12%	151.33%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Selenium	7782492	0.038000	0.038000	0.005000	0.020000	760.00%	190.00%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Silver	7440224	0.220000	0.220000	NA	0.003784	0.00%	5813.31%	Application	1	None	Monitoring	NA	Acute
Total Recoverable Thallium	7440280	0.000000	0.000000	0.006300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Zinc	7440666	0.220000	0.220000	0.119816	0.119816	183.61%	183.61%	Application	1	Monitoring	Monitoring	Chronic	Acute
Free Cyanide	57125	0.000000	0.000000	0.005200	0.022000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrolein	107028	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrylonitrile	107131	0.000000	0.000000	0.000250	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzene	71432	0.000000	0.000000	0.051000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bromoform	75252	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Carbon Tetrachloride	56235	0.000000	0.000000	0.001600	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorobenzene	108907	0.000000	0.000000	21.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorodibromomethane	124481	0.000000	0.000000	0.013000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloroform	67663	0.000000	0.000000	0.470000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dichlorobromomethane	75274	0.000000	0.000000	0.017000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloroethane	107062	0.000000	0.000000	0.037000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1-Dichloroethylene	75354	0.000000	0.000000	0.003200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloropropane	78875	0.000000	0.000000	0.015000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichloropropene	542756	0.000000	0.000000	1.700000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ethylbenzene	100414	0.000000	0.000000	29.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methyl Bromide	74839	0.000000	0.000000	1.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methylene Chloride	75092	0.000000	0.000000	0.590000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,2,2-Tetrachloroethane	79345	0.000000	0.000000	0.004000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Tetrachloroethylene	127184	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
Toluene	108883	0.000000	0.000000	200.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Trans-Dichloroethylene	156605	0.000000	0.000000	140.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,1-Trichloroethane	71556	0.000000	0.000000	1,670.220040	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
1,1,2-Trichloroethane	79005	0.000000	0.000000	0.016000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Trichloroethylene	79016	0.000000	0.000000	0.030000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Vinyl Chloride	75014	0.000000	0.000000	0.530000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chlorophenol	95578	0.000000	0.000000	0.150000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dichlorophenol	120832	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dimethylphenol	105679	0.000000	0.000000	0.850000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrophenol	51285	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pentachlorophenol	87865	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phenol	108952	0.071000	0.071000	1,700.000000	NA	0.00%	0.00%	Application	1	None	None	HH Fish	NA
2,4,6-Trichlorophenol	88062	0.000000	0.000000	0.002400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acenaphthene	83329	0.000000	0.000000	0.990000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Anthracene	120127	0.000000	0.000000	40.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzidine	92875	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)anthracene	56553	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)pyrene	50328	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(k)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroisopropyl)ether	108601	0.000000	0.000000	65.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-ethylhexyl)phthalate	117817	0.000000	0.000000	0.002200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Butylbenzyl phthalate	85687	0.000000	0.000000	1.900000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chloronaphthalene	91587	0.000000	0.000000	1.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chrysene	218019	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dibenzo(a,h)anthracene	53703	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichlorobenzene	95501	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichlorobenzene	541731	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,4-Dichlorobenzene	106467	0.000000	0.000000	2.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
3,3-Dichlorobenzidine	91941	0.000000	0.000000	0.000028	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Diethyl phthalate	84662	0.000000	0.000000	44.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dimethyl phthalate	131113	0.000000	0.000000	1,100.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Di-n-butyl phthalate	84742	0.000000	0.000000	4.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrotoluene	121142	0.000000	0.000000	0.003400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Diphenylhydrazine	122667	0.000000	0.000000	0.000200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluoranthene	206440	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluorene	86737	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobenzene	118741	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobutadiene	87683	0.000000	0.000000	0.018000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorocyclopentadiene	77474	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachloroethane	67721	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ideno(1,2,3-cd)pyrene	193395	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Isophorone	78591	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Nitrobenzene	98953	0.000000	0.000000	0.690000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodimethylamine	62759	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodi-n-Propylamine	621647	0.000000	0.000000	0.000510	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
N-Nitrosodiphenylamine	86306	0.000000	0.000000	0.006000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pyrene	129000	0.000000	0.000000	4.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2,4-Trichlorobenzene	120821	0.000000	0.000000	0.940000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Aldrin	309002	0.000000	0.000000	0.000000	0.003000	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
alpha-BHC	319846	0.000000	0.000000	0.000005	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Beta-BHC	319857	0.000000	0.000000	0.000017	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
gamma-BHC (Lindane)	58899	0.000000	0.000000	0.000063	0.000950	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Chlordane	57749	0.000000	0.000000	0.000001	0.002400	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDT	50293	0.000000	0.000000	0.000000	0.001100	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDE	72559	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
4,4'-DDD	72548	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dieldrin	60571	0.000000	0.000000	0.000000	0.000240	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Alpha-Endosulfan	959988	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Beta-Endosulfan	33213659	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endosulfan sulfate	1031078	0.000000	0.000000	0.089000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Endrin	72208	0.000000	0.000000	0.000036	0.000086	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endrin aldehyde	7421934	0.000000	0.000000	0.000300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Heptachlor	76448	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Heptachlor epoxide	1024573	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Polychlorinated Biphenyls (PCBs)		0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toxaphene	8001352	0.000000	0.000000	0.000000	0.000730	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
1,2,4,5-Tetrachlorobenzene	95943	0.000000	0.000000	0.001100	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-methyl-4,6-dinitrophenol	534521	0.000000	0.000000	0.280000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-D	94757	0.000000	0.000000	2,759.486834	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-TP (Silvex)	93721	0.000000	0.000000	83.511002	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-trichlorophenol	95954	0.000000	0.000000	3.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Asbestos	1332214	0.000000	0.000000	275,948.683.366733	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Benzo(b)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroethyl)ether	111444	0.000000	0.000000	0.000530	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(chloromethyl)ether	542881	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloropyrifos	2921882	0.000000	0.000000	0.000041	0.000083	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (III)	16065831	0.000000	0.000000	0.086180	1.803049	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (VI)	18540299	0.000000	0.000000	0.011000	0.016000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Demeton	8065483	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Dinitrophenols	25550587	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Guthion	86500	0.000000	0.000000	0.000010	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Hexachlorocyclo-hexane-Technical	319868	0.000000	0.000000	0.000041	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hydrogen Sulfide, Undissociated	7783064	0.000000	0.000000	0.002000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Malathion	121755	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Methoxychlor	72435	0.000000	0.000000	0.000030	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Mirex	2385855	0.000000	0.000000	0.000001	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Nitrosamines, Other		0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodibutylamine	924163	0.000000	0.000000	0.000220	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiethylamine	55185	0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosopyrrolidine	930552	0.000000	0.000000	0.034000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

<u>Parameter</u>	<u>CAS Number</u>	<u>Reported Discharge (mg/l)</u>		<u>Calculated Effluent Limitations (mg/l)</u>		<u>Reasonable Potential</u>		<u>Data Source</u>	<u>No. of Samples</u>	<u>Effluent Requirement</u>		<u>Justification</u>	
		<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>			<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>
Parathion	56382	0.000000	0.000000	0.000013	0.000065	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Pentachlorobenzene	608935	0.000000	0.000000	0.001500	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phthalate esters		0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Total Dissolved Solids		0.000000	0.000000	6,263,325.150301	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Tritium		0.000000	0.000000	NA	20,000.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Strontium-90		0.000000	0.000000	NA	8.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Uranium		0.000000	0.000000	NA	0.030000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Ammonia		0.000000	0.000000	3.360911	19.890204	0.00%	0.00%	No Data	0	None	None	Chronic	Acute

Hardness
 Metal limitations are developed
 using the mixed hardness of the
 effluent and receiving waters

Chronic
 100.00

Acute
 100.00

Toxicity

<u>Type of Test</u>	<u>Maximum</u>	<u>Units</u>	<u>Justification</u>	<u>Percent Effluent</u>
Chronic	1.00	TUc	Chronic	100.00%

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – LEACHATE POND

Permit Writer	Sara Beard	
Date Entered	5/25/2010	
Facility Name	Cash Creek	
KPDES Number	Generating Station	
Outfall Number	KY0107000	
Case	Leachate Pond (no outfall number)	
Status:	First Issuance	
Is this an existing facility – Enter “E”		
Is this an existing facility with an increase in pollutant load – Enter “I”		
Is this a new facility – Enter “N”		
Is this a regional facility with an approved up-to-date 201 plan – Enter “R”		
Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”	A	
Receiving Water Name	UT of Cash Creek (via Outfall 004)	
Discharge Mile Point	1.6	
Public Water Supply Name	Henderson Water Utility	
Intake Water Name	Ohio River	
Intake Mile Point	799.6	
Total Effluent Flow (Q_T)	0.35	MGD
Receiving Water 7Q10 (Q_{RW7Q10})	0	cfs
Receiving Water Harmonic Mean (Q_{RWHM})	0	cfs
Receiving Water pH	7.5	SU
Receiving Water Temperature	20.00	°C
Intake Water 7Q10 (Q_{IW7Q10})	12900	cfs
Intake Water Harmonic Mean (Q_{IWHM})	60900	cfs
Effluent Hardness	100	(as mg/l CaCO3)
Receiving Water Hardness	100	(as mg/l CaCO3)
Zone of Initial Dilution (ZID)	1	
Mixing Zone (MZ)	0	
Acute to Chronic Ratio (ACR)	0.1	
Impaired	No	
Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014	Yes	

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – LEACHATE POND

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
Chloride	16887006	0.000000	0.000000	600.000000	1,200.000000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Residual Chlorine		0.000000	0.000000	0.011000	0.019000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Color		0.000000	0.000000	1,785.803571	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Fluoride		0.000000	0.000000	47,621.428571	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Nitrate-Nitrite (as N)	14797558	0.000000	0.000000	238,107.142857	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Alpha		0.000000	0.000000	NA	15.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Beta		0.000000	0.000000	NA	50.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Radium		0.000000	0.000000	NA	5.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Sulfate (as SO4)		0.000000	0.000000	5,952,678.571429	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Surfactants		0.000000	0.000000	11,905.357143	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Barium	7440393	0.420000	0.420000	23,810.714286	NA	0.00%	0.00%	Application	1	None	None	HH DWS	NA
Total Recoverable Iron	7439896	0.000000	0.000000	1.000000	4.000000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Antimony	7440360	0.000000	0.000000	0.640000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Arsenic	7440382	0.020000	0.020000	0.150000	0.340000	13.33%	5.88%	Application	1	None	None	Chronic	Acute
Total Recoverable Beryllium	7440417	0.000000	0.000000	95.242857	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Cadmium	7440439	0.020000	0.020000	0.000271	0.002133	7390.36%	937.57%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Chromium	7440439	0.010000	0.010000	2,381.071429	NA	0.00%	0.00%	Application	1	None	None	HH DWS	NA
Total Recoverable Copper	7440508	0.000000	0.000000	0.009329	0.013999	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Lead	7439921	0.050000	0.050000	0.003182	0.081645	1571.54%	61.24%	Application	1	Monitoring	None	Chronic	Acute
Total Recoverable Mercury	7439976	0.010000	0.010000	0.000051	0.001700	19607.84%	588.24%	Application	1	Monitoring	Monitoring	HH Fish	Acute
Total Recoverable Nickel	7440020	0.000000	0.000000	0.052163	0.469174	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Selenium	7782492	0.020000	0.020000	0.005000	0.020000	400.00%	100.00%	Application	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Silver	7440224	0.002000	0.002000	NA	0.003784	0.00%	52.85%	Application	1	None	None	NA	Acute
Total Recoverable Thallium	7440280	0.000000	0.000000	0.006300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Zinc	7440666	0.000000	0.000000	0.119816	0.119816	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Free Cyanide	57125	0.000000	0.000000	0.005200	0.022000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrolein	107028	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrylonitrile	107131	0.000000	0.000000	0.000250	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzene	71432	0.000000	0.000000	0.051000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bromoform	75252	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Carbon Tetrachloride	56235	0.000000	0.000000	0.001600	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorobenzene	108907	0.000000	0.000000	21.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorodibromomethane	124481	0.000000	0.000000	0.013000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloroform	67663	0.000000	0.000000	0.470000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dichlorobromomethane	75274	0.000000	0.000000	0.017000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloroethane	107062	0.000000	0.000000	0.037000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1-Dichloroethylene	75354	0.000000	0.000000	0.003200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloropropane	78875	0.000000	0.000000	0.015000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichloropropene	542756	0.000000	0.000000	1.700000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ethylbenzene	100414	0.000000	0.000000	29.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methyl Bromide	74839	0.000000	0.000000	1.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methylene Chloride	75092	0.000000	0.000000	0.590000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,2,2-Tetrachloroethane	79345	0.000000	0.000000	0.004000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Tetrachloroethylene	127184	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toluene	108883	0.000000	0.000000	200.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – LEACHATE POND

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
1,2-Trans-Dichloroethylene	156605	0.000000	0.000000	140.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,1-Trichloroethane	71556	0.000000	0.000000	4,762.142857	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
1,1,2-Trichloroethane	79005	0.000000	0.000000	0.016000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Trichloroethylene	79016	0.000000	0.000000	0.030000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Vinyl Chloride	75014	0.000000	0.000000	0.530000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chlorophenol	95578	0.000000	0.000000	0.150000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dichlorophenol	120832	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dimethylphenol	105679	0.000000	0.000000	0.850000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrophenol	51285	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pentachlorophenol	87865	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phenol	108952	0.000000	0.000000	1,700.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4,6-Trichlorophenol	88062	0.000000	0.000000	0.002400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acenaphthene	83329	0.000000	0.000000	0.990000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Anthracene	120127	0.000000	0.000000	40.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzidine	92875	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)anthracene	56553	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)pyrene	50328	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(k)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroisopropyl)ether	108601	0.000000	0.000000	65.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-ethylhexyl)phthalate	117817	0.000000	0.000000	0.002200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Butylbenzyl phthalate	85687	0.000000	0.000000	1.900000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chloronaphthalene	91587	0.000000	0.000000	1.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chrysene	218019	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dibenzo(a,h)anthracene	53703	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichlorobenzene	95501	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichlorobenzene	541731	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,4-Dichlorobenzene	106467	0.000000	0.000000	2.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
3,3-Dichlorobenzidine	91941	0.000000	0.000000	0.000028	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Diethyl phthalate	84662	0.000000	0.000000	44.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dimethyl phthalate	131113	0.000000	0.000000	1,100.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Di-n-butyl phthalate	84742	0.000000	0.000000	4.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrotoluene	121142	0.000000	0.000000	0.003400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Diphenylhydrazine	122667	0.000000	0.000000	0.000200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluoranthene	206440	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluorene	86737	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobenzene	118741	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobutadiene	87683	0.000000	0.000000	0.018000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorocyclopentadiene	77474	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachloroethane	67721	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ideno(1,2,3-cd)pyrene	193395	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Isophorone	78591	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Nitrobenzene	98953	0.000000	0.000000	0.690000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodimethylamine	62759	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodi-n-Propylamine	621647	0.000000	0.000000	0.000510	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiphenylamine	86306	0.000000	0.000000	0.006000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pyrene	129000	0.000000	0.000000	4.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – LEACHATE POND

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
1,2,4-Trichlorobenzene	120821	0.000000	0.000000	0.940000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Aldrin	309002	0.000000	0.000000	0.000000	0.003000	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
alpha-BHC	319846	0.000000	0.000000	0.000005	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Beta-BHC	319857	0.000000	0.000000	0.000017	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
gamma-BHC (Lindane)	58899	0.000000	0.000000	0.000063	0.000950	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Chlordane	57749	0.000000	0.000000	0.000001	0.002400	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDT	50293	0.000000	0.000000	0.000000	0.001100	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDE	72559	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
4,4'-DDD	72548	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dieldrin	60571	0.000000	0.000000	0.000000	0.000240	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Alpha-Endosulfan	959988	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Beta-Endosulfan	33213659	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endosulfan sulfate	1031078	0.000000	0.000000	0.089000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Endrin	72208	0.000000	0.000000	0.000036	0.000086	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endrin aldehyde	7421934	0.000000	0.000000	0.000300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Heptachlor	76448	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Heptachlor epoxide	1024573	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Polychlorinated Biphenyls (PCBs)		0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toxaphene	8001352	0.000000	0.000000	0.000000	0.000730	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
1,2,4,5-Tetrachlorobenzene	95943	0.000000	0.000000	0.001100	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-methyl-4,6-dinitrophenol	534521	0.000000	0.000000	0.280000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-D	94757	0.000000	0.000000	7,868.350000	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-TP (Silvex)	93721	0.000000	0.000000	238.107143	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-trichlorophenol	95954	0.000000	0.000000	3.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Asbestos	1332214	0.000000	0.000000	786,835,000.000000	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Benzo(b)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroethyl)ether	111444	0.000000	0.000000	0.000530	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(chloromethyl)ether	542881	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloropyrifos	2921882	0.000000	0.000000	0.000041	0.000083	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (III)	16065831	0.000000	0.000000	0.086180	1.803049	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (VI)	18540299	0.000000	0.000000	0.011000	0.016000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Demeton	8065483	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Dinitrophenols	25550587	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Guthion	86500	0.000000	0.000000	0.000010	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Hexachlorocyclo-hexane-Technical	319868	0.000000	0.000000	0.000041	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hydrogen Sulfide, Undissociated	7783064	0.000000	0.000000	0.002000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Malathion	121755	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Methoxychlor	72435	0.000000	0.000000	0.000030	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Mirex	2385855	0.000000	0.000000	0.000001	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Nitrosamines, Other		0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodibutylamine	924163	0.000000	0.000000	0.000220	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiethylamine	55185	0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosopyrrolidine	930552	0.000000	0.000000	0.034000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Parathion	56382	0.000000	0.000000	0.000013	0.000065	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Pentachlorobenzene	608935	0.000000	0.000000	0.001500	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phthalate esters		0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – LEACHATE POND

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Maximum
Total Dissolved Solids		0.000000	0.000000	17,858,035.714286	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Tritium		0.000000	0.000000	NA	20,000.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Strontium-90		0.000000	0.000000	NA	8.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Uranium		0.000000	0.000000	NA	0.030000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Ammonia		0.000000	0.000000	3.360911	19.890204	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Hardness	Chronic	Acute											
Metal limitations are developed using the mixed hardness of the effluent and receiving waters													
Toxicity													
Type of Test	Maximum	Units	Justification	Percent Effluent									
Chronic	1.00	TUc	Chronic	100.00%									

316(b) Reporting Sheets

INSTRUCTIONS

All Worksheets

Date: Indicate the date the samples were collected or inspection conducted.

Screen No.: Indicate the number of the screen that samples were collected from or inspected.

Impingement and Entrainment Worksheets

Sample Collection Method: Indicate how the samples were collected and over what time frame.

Species: Provide the species name of each aquatic organism impinged or entrained.

Eggs, Larvae, Adults: Indicate the number of eggs, larvae, and adults of each species of aquatic organism impinged or entrained.

Velocity Monitoring Worksheet

Head Loss: Is the difference between the pressure outside and the pressure inside the screen.

Calculated Velocity: Using the following formula calculate the velocity across the screen or equivalent methods.

$$V = \sqrt{2g_c \left(\frac{\Delta h}{\left(\frac{n}{C^2} \right) \left(\frac{1 - \alpha^2}{\alpha^2} \right)} \right)}$$

Where V = Velocity (ft/sec)
 g_c = 32.17 ((lb)(ft))/(lb force)(sec²)
 Δh = head loss (ft of fluid flowing)
 n = number of screens in series
 C = screen discharge coefficient (dimensionless)
 α = fractional free projected area of screen (dimensionless)

Design Velocity: Indicate the design velocity across the screen.

Visual or Remote Inspections Worksheet

Method of Inspection: Indicate whether the inspection was a visual or a remote inspection (i.e. camera).

Flow Through Screen

Restricted: Yes or No
Percent: Percent of screen surface restricted
Cause of Restriction: Siltation, Thrash, Vegetation, etc.

Screen Condition

Damaged: Yes or No
Nature of Damage: Describe the damage to the screen
Cause of Damage: What caused the damage? (e.g. flood waters, river traffic, vandalism, etc.)

Maintenance Required

Type: Routine, Repair, or Replacement
Schedule: Date activity scheduled
Completed: Date activity completed

Impingement Worksheet					
Screen No.	Sample Collection Method	Species	Number Impinged		
			Eggs	Larvae	Adults

Entrainment Worksheet						
Date	Screen No.	Sample Collection Method	Species	Number Entrained		
				Eggs	Larvae	Adults

Velocity Monitoring Worksheet				
Date	Screen No.	Head Loss	Velocity	
			Calculated	Design

Visual or Remote Inspections Worksheet					
Date	Screen No.	Method of Inspection	Flow Through Screen		
			Restricted	Percent	Cause of Restriction

Visual or Remote Inspections Worksheet - continued					
Screen Condition			Maintenance Required		
Damaged	Nature of Damage	Cause of Damage	Type	Scheduled	Completed